

asthma

a **strategic plan**
for addressing

in **Indiana**



data and
surveillance



public
education



children
and youth



environmental
quality



health care
provider

prepared by the **Indiana Joint Asthma Coalition**
(InJAC)

in conjunction with the **Indiana State**
Department of Health (ISDH)

and the **Indiana Department of**
Environmental Management
(IDEM)

December 2004

A strategic plan for addressing *asthma* in Indiana

Prepared by the:
**Indiana Joint Asthma Coalition
(InJAC)**

in conjunction with the:



**Indiana State
Department of Health**

www.in.gov/isdh/

and the:



**Indiana Department of
Environmental Management**

www.in.gov/idem/

December 2004

a letter from the commissioners of the
Indiana State Department of Health, and the
Indiana Department of Environmental Management

Dear reader,

The Indiana State Department of Health, the Indiana Department of Environmental Management and the Indiana Joint Asthma Coalition (InJAC) are pleased to present Indiana's first state Asthma Plan.


As many as 341,000 adult Hoosiers have been diagnosed with asthma, which is one of the most common chronic diseases in the world. While highly effective treatment exists, asthma is often uncontrolled or poorly controlled, needlessly keeping those who suffer with the disease from school, work and leisure activities. The disease disproportionately affects the most vulnerable: children, certain minorities, women and the poor.

The consequences of asthma are costly in both dollar and quality of life terms. Asthma often results in disruption of family and caregiver routine and is accompanied by higher rates of depression and stress. Populations and communities with the greatest burden of asthma often lack access to quality medical care and education about asthma management. The prevalence of tobacco smoking in Indiana contributes to the asthma burden – increasing the number of attacks suffered by asthmatics that smoke, as well as among those exposed to secondhand smoke. There are many other potentially controllable environmental factors, including the burning of trash and elevated ozone levels that may also contribute to increased asthma attacks.

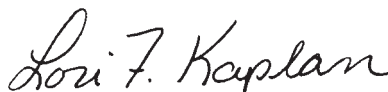
Recognizing Indiana's need to minimize the asthma burden Hoosiers face, the InJAC was formed in 2003 and directed to develop a comprehensive, statewide plan. Five workgroups have spent 20 months focusing on areas of Data and Surveillance, Environmental Quality, Public Education, Children and Youth, and Health Care Provider. They have examined Indiana asthma data and studied interventions that have proven effective. We are grateful to each member of the workgroups for the devotion each has given to this monumental task.

The goals, objectives and strategies contained in *A Strategic Plan for Addressing Asthma in Indiana* are evidence-based, directed at improving the lives of Indiana citizens with asthma and considered feasible to implement in the next 5 years. Successful implementation will come only through continued close collaboration among individuals, public, private, and non-profit organizations. We are confident that through InJAC, we have formed a framework that will enable these essential partnerships to continue. Thank you for your interest in this issue. For the health of our state, we must now maintain that interest and move forward toward full implementation of the plan. This will require all of us to work together in the months and years ahead.

Sincerely,



Gregory A. Wilson, M.D.
Commissioner
State Department of Health



Lori F. Kaplan
Commissioner
Indiana Department of Environmental Management

a letter from the chairperson of the
Indiana Joint Asthma Coalition

Dear reader,

A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan) is the product of almost 20 months of planning. In the early part of 2003, the leadership of the Indiana Department of Health and the Indiana Department of Environmental Management invited people and organizations to form the Indiana Joint Asthma Coalition (InJAC). The initial charge of InJAC was to formulate Indiana's first state Asthma Plan in order to reduce the burden of asthma in Indiana.

A major intent of the state plan is to provide a mechanism for surveillance for this serious chronic condition of the respiratory tract. In addition, our charge was to use interventions established in the literature for the care of asthma and apply those tools to the unique needs of the people of the state of Indiana. The *Indiana Asthma Plan* adheres to this standard by using strategies that are evidence-based.

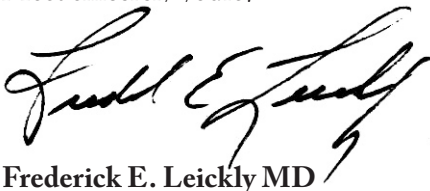
A second major requirement for the state plan is to focus on those in Indiana who have asthma. The *Indiana Asthma Plan* emphasizes the prevention of exacerbations in those already affected by the condition. This focus is termed secondary prevention. We also saw the distinct need to help those with signs and symptoms of asthma, yet with no formal diagnosis. There are a number of strategies in the plan directed toward helping establish the diagnosis in order to provide the correct treatment. Primary prevention, actually stopping the condition from developing, was recognized by all as something of great value but at this time beyond InJAC's charge.

Contained within the *Indiana Asthma Plan* are numerous goals, objectives, and strategies developed by InJAC workgroups. Many of the goals and objectives were based on the findings of the Indiana Asthma Burden report. Others are issues common to asthma, but may not have been part of the Burden report. The *Indiana Asthma Plan* begins with strategies that are possible over a five-year timeline. We see the document as being dynamic, that is, being able to change over time to meet Indiana needs as they are discovered. The plan was not meant to be all-inclusive. What we offer now are those first essential and feasible steps to put the plan into action. We eagerly look forward to the continued evolution of the plan over time.

The *Indiana Asthma Plan* is the first product of InJAC. Contributions to the plan were made by InJAC members who not only recognized problems, but also identified solutions and are willing to work hard to see through the completion of the goals, objectives, and strategies. InJAC members have worked very hard on the plan development and I look forward to working with each of them and new members as we put the Indiana Asthma Plan into action.

From the bottom of my heart, my most sincere thanks to all members of the Indiana Joint Asthma Coalition who worked so hard to make the *Indiana Asthma Plan* a reality.

Most sincerely yours,








Frederick E. Leickly MD

Professor of Clinical Pediatrics

James Whitcomb Riley Hospital for Children

Indiana University School of Medicine

contents

	Acknowledgements	8
	Executive summary	13
	Introduction	19
	Indiana’s asthma burden	25
	Data and surveillance	31
	Public education	37
	Children and youth	45
	Environmental quality	53
	Health care provider	67
	Implementation evaluation plan	79
	Potential partners	82
	References	83
	Bibliography	88
	Glossary	90
	Acronyms and abbreviations	97
	Appendix	99

acknowledgements

We wish to thank the many individuals and organizations that participated in developing *A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)*.

InJAC Chairperson

Frederick Leickly, MD, James Whitcomb Riley Hospital for Children, Allergy-Immunology

Steering Committee

Frederick Leickly, MD, Chair, James Whitcomb Riley Hospital for Children, Allergy-Immunology

Robin Costley, CRT, Marion County Health Department, Asthma Alliance of Indianapolis

Steve Downs, MD, MS, James Whitcomb Riley Hospital for Children, Children's Health Services Research

Judith Ganser, MD, MPH, Indiana State Department of Health, Maternal and Child Health

Ingrid Ritchie, Ph.D., School of Public and Environmental Affairs, Indiana University-Purdue University Indianapolis

Paula Smith, Indiana Department of Environmental Management, Planning and Assessment

Donna A. Stephens, MBA, Learning Well, Inc.

Donald Trainor, MD, HealthNet Community Health Centers

InJAC Workgroups

Data and Surveillance

Steve Downs, MD, MS, Chair, James Whitcomb Riley Hospital for Children, Children's Health Services Research

Joel Conner, Indiana State Department of Health, Maternal and Child Health Data Section

Mat Delillo, Indiana Family and Social Services Administration, Office of Medicaid Policy and Planning

Elizabeth Hamilton-Byrd, MD, Indiana State Department of Health, Epidemiology Resource Center

Jon E. Lewis, PhD, Indiana State Department of Health, Epidemiology Resource Center

Robert Lehnert, PhD, Indiana University-Purdue University Indianapolis
Sarah Raymond, Indiana Department of Environmental Management
Marc Rosenman, MD, James Whitcomb Riley Hospital for Children, Children's Health
Services Research
Linda Stemnack, Indiana State Department of Health, Epidemiology Resource Center
Bernie Ulrich, Indiana Hospital & Health Association
Lisa Winternheimer, Indiana Primary Health Care Association
Cindy Woodruff, Indiana State Department of Health, Asthma Program

Public Education

Robin Costley, CRT, Chair, Marion County Health Department, Asthma Alliance of
Indianapolis
Steve Adams, Hoosier Uplands Economic Development Corporation
Keisha Banks, Indiana State Department of Health, Office of Women's Health
Tasha Smith-Bonds, Indiana State Department of Health, Sickle Cell Program
Fayette Bright, US Environmental Protection Agency Region 5
Ashley Laine Buck, *Just Bee Breathe Easy*, Indiana University
Danette Fariss, St. Vincent Hospital
Anita Gaillard, Indiana Tobacco Prevention & Cessation Agency
Mary Ann Hurtle, Indiana State Department of Health, Chronic Disease
Loan Pham, Indiana State Department of Health, Asthma Program
Nancy Stone, Indiana Parent Information Network
Ann Marie Thomas, Indiana University Medical Group

Children and Youth

Donna A. Stephens, MBA, Chair, Learning Well, Inc.
Sheila Batka, MS, U.S. Environmental Protection Agency Region 5
Nancy Cobb, Indiana State Department of Health, Children's Environmental Health/
Lead/Asthma Program
Mary Conway, RN, Indianapolis Public Schools
Elizabeth Culp, Indiana Family and Social Services Administration
Donna Hogle, Indiana Family and Social Services Administration
Tami Johnson, Indiana Department of Environmental Management, Children's
Environmental Health
Dennis Kemp, Dukes Hospital
Sarah Knies, Indiana Department of Environmental Management
Kathleen Kraner, Memorial Community Health Enhancement
Kurt Kuroiwa, Indiana Family and Social Services Administration, Child Care Health
Section
Phyllis Lewis, RN, Indiana Department of Education, Office of Student Services

acknowledgements

Wendy Michalski, RN, Indiana State Department of Health, Children's Special Health Care Services
Marti Michael, RN, CPNP, Clarian Health
Thadkor Patel, Kripalu Yoga Foundation, Inc.
Loan Pham, Indiana State Department of Health, Asthma Program
Phil Ritchie, Lawrence Township Schools
Julie M. Slavens, Indiana School Boards Association
Maryann E. Suero, PhD, Children's Health US EPA Region 5

Environmental Quality

Ingrid Ritchie, Ph.D., Chair, School of Public and Environmental Affairs, Indiana University-Purdue University Indianapolis
Lisa Cauldwell, MPH, Marion County Health Department
Pat Daniel, Indiana Department of Environmental Management, Children's Environmental Health
Larry Haag, Indiana Department of Environmental Management, Southwest Regional Office,
Julia Tipton-Hogan
Tami Johnson, Indiana Department of Environmental Management, Children's Environmental Health
Sarah Knies, Indiana Department of Environmental Management
Janet McCabe, Indiana Department of Environmental Management, Air Quality
Jeff Myers, Greene Co. Solid Waste Management District
Tom Neltner, Improving Kids' Environment
Niles Parker, Indiana Department of Commerce, Community Development Division
Loan Pham, Indiana State Department of Health, Asthma Program
John Ruyack, Indiana State Department of Health, Indoor Air Quality
Paula Smith, Indiana Department of Environmental Management, Planning and Assessment
Michelle Sommers, Hoosier Environmental Council
Cheri Storms, Indiana Department of Environmental Management
Judy Tucker, U.S. Department of Housing and Urban Development

Health Care Provider

Donald Trainor, MD, Chair, HealthNet Community Health Centers
Karen Amstutz, MD, MDwise
David Blair, RPh, Medical Care and Options
Judith Ganser, MD, MPH, Indiana State Department of Health, Maternal and Child Health
Greta Darlage, RN, James Whitcomb Riley Hospital for Children

Kelly Franks Henderson, Pharm D, CDM, MDwise
Julie Koehler, Pharm D, IU Methodist Family Practice Center
Jamie Lee, RRT, IU Medical Group/Wishard Hospital
Frederick Leickly, MD, James Whitcomb Riley Hospital for Children, Allergy-
Immunology
Marti Michel, RN, CPNP, Clarian Health/Methodist Hospital
Marc Rosenman, MD, James Whitcomb Riley Hospital for Children, Children's Health
Services Research
Michael Tsangaris, MD, Pediatric Pulmonary, James Whitcomb Riley Hospital for
Children

Professional Services and Support

Judith Ganser, MD, MPH, Indiana State Department of Health, Maternal and Child
Health
Paula Smith, Indiana Department of Environmental Management, Planning and
Assessment
Nancy Cobb, Indiana State Department of Health, Children's Environmental Health/
Lead/Asthma Program
Pat Daniel, Indiana Department of Environmental Management, Children's
Environmental Health
Elizabeth Hamilton-Byrd, MD, Indiana State Department of Health, Epidemiology
Resource Center
Mary Ann Hurtle, Indiana State Department of Health, Chronic Disease
Tami Johnson, Indiana Department of Environmental Management, Children's
Environmental Health
Sarah Knies, Indiana Department of Environmental Management
Loan Pham, Indiana State Department of Health, Asthma Program
Cheri Storms, Indiana Department of Environmental Management
Cindy Woodruff, Indiana State Department of Health, Asthma Program

The InJAC also thanks Emily Marshman and Nancy Gauder of MG Consulting, Inc. for the many hours of meticulous work they did to prepare this document. In addition, InJAC thanks Cheryl Reed, IDEM and Joni Albright, ISDH for their assistance in the work of the coalition and in preparing the *Indiana Asthma Plan*.

Funding for the *Indiana Asthma Plan*

The Indiana Asthma Plan was supported in part by Grant Number # U59/CCU52080-02 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the contributing authors and do not necessarily reflect the official views of the Centers for Disease Control and Prevention.

executive summary

A *Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)* was developed through the joint efforts of the Indiana State Department of Health (ISDH), the Indiana Department of Environmental Management (IDEM), and the Indiana Joint Asthma Coalition (InJAC). Development of the *Indiana Asthma Plan* was funded in part by the Centers for Disease Control and Prevention (CDC) National Asthma Program.

The InJAC was formed in 2003 to develop a state strategic plan designed to reduce Indiana's asthma burden and to guide the future of Indiana's statewide asthma program. The InJAC includes volunteer representatives from over 50 state agencies, health care professionals, educators, local public health agencies, managed care plans, hospitals, schools, environmental groups, and other community-based organizations and individuals concerned with the prevention and control of asthma in Indiana. The InJAC focused on both health and environmental solutions to reduce the burden of asthma in Indiana.

This five-year plan establishes goals, objectives, and strategies that can be used by organizations, professions, and individuals to improve the health of Hoosiers with asthma. It provides Hoosiers with an ambitious and comprehensive approach to improving the health and quality of life for those with asthma while at the same time offering practical strategies that can be implemented within five years and sustained thereafter. The goals, objectives, and strategies of the *Indiana Asthma Plan* span health care settings, schools and early care

settings, workplaces, indoor and outdoor environments, and the homes and buildings in which persons with asthma live or visit.

The *Indiana Asthma Plan* is to be considered a work-in-progress. The plan may be modified as the state moves towards implementation and as resources and needs within the state change. The InJAC will assess the *Indiana Asthma Plan* annually and revise it as needed to help ensure that it continues to address asthma effectively and improves the quality of life of Hoosiers with asthma.

Asthma in Indiana

Asthma is an important public health problem in Indiana. It ranks among the most common chronic conditions in the state, affecting an increasing number of Hoosiers. It is more common among children than adults, among African Americans versus persons of other races, and among lower-income populations. The prevalence of asthma in Indiana is 7.5%, which is comparable to the national prevalence of this common chronic illness. While the self-reported asthma prevalence for Indiana whites is 7.1%, it is 12.2% for African Americans and 13.5% for non-Hispanic multiracial Hoosiers.

While medical care for asthma has improved significantly, the human and financial costs of asthma continue to grow. Asthma is the cause of many lost days of work and school, many hospitalizations and visits to the emergency departments. Asthma often results in restricted activities, lost nights of sleep, school absenteeism, and disruption of family and caregiver routine. Taking care of asthma is also costly for patients and their families,

executive summary

imposing financial burdens such as lost income and job opportunities. Barriers to access to health care and deficiencies in asthma management can compromise quality outcomes for persons with asthma.

Additional tracking of the occurrence of asthma and asthma events in Indiana is necessary to improve the understanding of individual and environmental factors that contribute to the burden. By continuing to enhance existing means of data collection as well as adding new sources of data, our understanding and management of the burden of asthma in Indiana will become more comprehensive over time.

Comprehensive and coordinated solutions

Asthma is a multi-faceted public health issue for which there is no simple, easy, one-time solution. Solutions designed to reduce the burden of asthma require:

- improving the identification of persons with the disease
- assisting persons in adhering to their management regimens
- addressing cultural barriers, increasing access to quality medical care and supportive outreach services
- providing resources to identify and reduce environmental hazards
- ongoing surveillance to understand the patterns of disease, the populations most affected, and how to plan and evaluate programs.

Although efforts to address Indiana's asthma burden are currently in place, a need was recognized for a more focused and comprehensive approach that unified the broad array of public and private entities involved with asthma. To develop a multi-faceted approach to reduce Indiana's asthma burden, five InJAC workgroups were formed to research, determine, and prioritize the direction within their area of focus. Following is a summary

of the priorities and related goals and actions identified by the individual workgroups. Also included is a timeline of the *Indiana Asthma Plan* objectives by workgroup.

Data Collection and Surveillance

The Data and Surveillance Workgroup determined the need to focus on developing and implementing a comprehensive asthma surveillance plan. Provisions for surveillance enhancement, ongoing evaluation, and information sharing were also included. Strategies were selected to address the following:

- Data needs
- Comprehensive and structured asthma data surveillance system
- Timely access to data
- Standard data definitions

These elements were incorporated into three overall goals:

- Goal 1: Establish sustainable, ongoing monitoring and evaluation of the asthma burden in Indiana.
- Goal 2: Coordinate the ongoing evaluation of the *Indiana Asthma Plan*.
- Goal 3: Develop mechanisms for sharing information from surveillance and evaluation.

Public Education

The Public Education Workgroup established the need to focus on increasing public awareness of asthma as a serious chronic disease and on improving the knowledge and skills of patients regarding the detection, treatment, and control of asthma, particularly among high-risk populations. Strategies were selected to address the following:

- Asthma education and public awareness
- Asthma information resources
- Peer education and social support
- Access to quality asthma education programs
- Asthma coalition building

These elements were incorporated into two overall goals:

- Goal 1: Increase public awareness and understanding of asthma.
- Goal 2: People with asthma and their families and caregivers will have the knowledge and resources to self-manage their disease.

Children and Youth

The InJAC Children and Youth Workgroup focused on goals and objectives related to schools and early care settings. Objectives were developed to assist these facilities in building increased asthma awareness among staff and students and to enhance management and support systems so the facilities are well equipped to attend to children with asthma and provide an asthma friendly and safe environment. Strategies were selected to address the following:

- Asthma education and awareness
- Stronger management and support systems
- Safe and healthy environments
- School nurse coordination
- Coordination of school, family and community efforts

These elements were incorporated into two overall goals:

- Goal 1: Increase awareness of the asthma burden among children and youth, their caregivers and their community-based education and regulated early care providers.
- Goal 2: Improve school and regulated early care settings' asthma management and support systems to reduce the asthma burden among children, youth and their caregivers.

Environmental Quality

The Environmental Quality Workgroup's approach to reducing the asthma burden relied on basic public health principles of risk reduction and disease prevention. The workgroup strategies emphasize broad-based surveillance and education efforts that include the distribution of education materials, technical assistance, and promotion of an educational website for environmental and work-related hazards. Strategies also address evaluating and updating regulations, standards, and programs to reflect new knowledge about environmental and work-related hazards for asthma and creating linkages among key agencies and organizations throughout the state. Strategies were selected to address environmental hazards that contribute to Indiana's asthma burden in the following:

- Indiana homes and commercial buildings
- Schools and regulated early care settings
- Outdoor air
- Indoor and outdoor workplaces

These elements were incorporated into five overall goals:

- Goal 1: Reduce environmental hazards that contribute to asthma in Indiana homes, rental properties and commercial buildings.
- Goal 2: Reduce environmental hazards that contribute to the asthma burden in Indiana schools and regulated early care settings.
- Goal 3: Indiana Health Care Providers will have the information to evaluate environmental and work-related hazards that impact their patients with asthma and direct actions for reducing risks.
- Goal 4: Reduce environmental hazards that contribute to the asthma burden in Indiana's outdoor air.
- Goal 5: Reduce environmental and work-related hazards that contribute to the asthma burden in Indiana's indoor and outdoor workplaces.

executive summary

Health Care Provider

The Health Care Provider Workgroup determined the need to focus on asthma management by practicing providers, training of future health care providers, and meeting patient needs most effectively in a medical home. To provide the most appropriate care for persons with asthma, the workgroup

selected strategies to address the following:

- Best practice guidelines
- Patient education and asthma action plans
- Health benefit coverage and reimbursement
- Health care provider education
- Medical home concept

Summary of the Indiana Asthma Plan Objectives (by year and workgroup)

NOTES

Objective descriptions are abbreviated from the full plan version

(G1O1) = Goal 1, Objective 1

2006	D&S	<ul style="list-style-type: none"> • Enhance statewide asthma surveillance (G1O1) • Develop and implement an annual review of the Indiana asthma plan (G2O1) • Disseminate an ongoing annual report on the asthma burden (G3O1)
	EQ	<ul style="list-style-type: none"> • Develop tools to increase public knowledge of environmental hazards and reduce these hazards in buildings & homes (G1O1) • Propose revisions to the Schoolhouse Rule to address environmental hazards (G2O1) • Develop technical information for parents, schools, and early care settings to reduce environmental hazards (G2O3) • Develop tools to increase public knowledge of outdoor environmental hazards and to reduce these outdoors hazards (G4O2)
	HCP	<ul style="list-style-type: none"> • Develop a best practice course for HCPs offering CEU and CME (G1O5) • Provide resources to HCPs to facilitate coordination of patient care with community-based partners (G3O3)
2007	D&S	<ul style="list-style-type: none"> • Make annual improvements to the surveillance system (G1O2) • Make available a database of databases, linking users to all relevant data sources (G3O2) • Develop and disseminate asthma database policies and procedures (G3O3)
	PE	<ul style="list-style-type: none"> • Launch a statewide public awareness campaign (G1O1) • Develop and publish a web-based Asthma Resource Guide (G1O2)
	EQ	<ul style="list-style-type: none"> • Develop tools/info for comm. property owners and building-related professionals to identify and reduce hazards (G1O2) • Develop technical information for model tools that HCPs can use to educate patients about environmental hazards (G3O1)
	HCP	<ul style="list-style-type: none"> • Achieve a 10% increase in HCPs who use the NHLBI preferred / alternate therapy guidelines (G1O1) • Achieve a 10% increase in HCPs who provide asthma education and written AAPs (G1O2) • Achieve a 10% increase in HCPs who obtain patient ETS history and direct appropriate action (G1O4) • Achieve a 10% increase in HCPs who obtain and act upon work-related and non-tobacco environmental history (G1O3)

These elements were incorporated into three overall goals:

- Goal 1: Indiana Health Care Providers will implement best practice guidelines for the diagnosis and management of asthma.
- Goal 2: Future Indiana health care providers who will care for Hoosiers with asthma will receive a comprehensive core asthma curriculum.
- Goal 3: People with asthma will have a medical home in which their asthma management consists, at the least, of a source of first-contact care, person-focused care over time, comprehensive and coordinated care.

2008	D&S	• Develop new partnerships with organizations that collect data to evaluate Indiana's asthma burden (G202)
	PE	• Plan and promote asthma outreach activities and events in 25% of IN counties (G103)
	C&Y	• 50% of schools and early care settings will have increased awareness of the asthma burden (G101) • 40% of schools and early care settings will be able to identify factors in their facilities that contribute to asthma (G102) • Support the development of support networks and community partnerships for schools/early care settings (G204)
	EQ	• Identify environmental & work-related hazards & conduct surveillance for workplace asthma (G501)
	HCP	• Develop strategies for the reimbursement of asthma services, materials, and equipment (G106) • Develop core curriculum standards to be incorporated into Indiana training programs for future HCPs (G201) • Distribute the core curriculum standards to academic institutions and training programs (G202)
2009	PE	• Achieve a 10% increase in access to evidence-based, quality health information related to asthma (G201) • Provide assistance to communities interested in implementing an asthma peer education program (G202)
	C&Y	• 75% increase (schools) and 25 % increase (early care settings) that require individualized health care plans (G201) • 40% of schools and regulated early care settings will implement best practices policies (G202) • 25% increase in schools/early care settings that implement asthma health promotion / education programs (G203)
	EQ	• 20% increase in capacity for state and local governments to identify and reduce hazards in homes and buildings (G103) • Recommend revisions to voluntary and regulatory codes that affect schools and regulated early care settings (G202) • 20% increase in capacity for state and local governments to identify/reduce hazards in schools and early care settings (G204) • Attain ozone and fine particulate matter health standards in 24 federal designated counties (G401) • Reduce emissions from outdoor burning (G403) • Develop technical information for modifying workplace behavior, and best practices to reduce burden (G502)
	HCP	• Evaluate how the asthma core curriculum has been incorporated into HCP training programs (G203) • 25% of HCPs will understand the medical home concept and how to facilitate patient participation (G301) • Achieve a 5% increase of PCPs who implement elements of the medical home concept in their practice (G302) • Develop a model asthma benefit plan that supports medical home and chronic care frameworks (G304)

introduction

The Commissioners of the Indiana State Department of Health (ISDH) and the Indiana Department of Environmental Management (IDEM) invited volunteers to join the Indiana Joint Asthma Coalition (InJAC), to develop a state strategic plan designed to reduce asthma morbidity and mortality in Indiana and to guide the future of Indiana's statewide asthma program. The focus of the Coalition has been on both health and environmental solutions to reduce Indiana's asthma burden. Another activity of the Coalition has been to advise on an asthma case management program to be used by the Indiana Chronic Disease Management Program of the Office of Medicaid Policy and Planning.

Asthma - a significant public health issue

Asthma ranks among the most common chronic conditions in the country, affecting an increasing number of Americans—an estimated 23.9 million persons of all ages and races in 2002.(1) It is more common among children than adults, among African Americans versus persons of other races and among lower-income populations.(2) Nine million children in the United States have been diagnosed with asthma at some point in their lives, and more than 4 million report they have had an asthma attack in the past 12 months. Nationally, children in poor families (16%) were more likely to have been diagnosed with asthma than children in families that were not poor (11%).(3)

The prevalence of asthma in Indiana is 7.5%, which is comparable to the national prevalence of this common chronic illness.(1) While the self-

reported asthma prevalence for Indiana whites is 7.1%, it is 12.2% for African Americans and 13.5% for non-Hispanic multiracial Hoosiers.(4)

In 1998, asthma accounted for over 10.4 million outpatient visits, almost 2 million emergency department visits, an estimated 423,000 hospitalizations, and 5,438 deaths in the United States. Children had more than twice the rate of outpatient and emergency department visits than adults. African Americans had a physician office visit rate 40% higher than other races. The emergency department visit rate for African Americans was 125% higher than for other races and the hospitalization rate was 220% higher.(5)

While medical care for asthma has improved significantly, the human and financial costs of asthma continue to grow.(6) Symptoms not severe enough to require a visit to the emergency room or to a physician can still affect quality of life. Asthma often results in restricted activities, lost nights of sleep, school absenteeism, and disruption of family and caregiver routine. It is the leading work-related lung disease and recent evidence suggests that, in some regions, as much as 20 percent of adult onset asthma may be work-related.(7) Taking care of asthma is costly for patients and their families, imposing financial burdens including lost workdays and income, as well as lost job opportunities. The National Heart, Lung, and Blood Institute estimated the total cost of asthma in 2004 at \$12.7 billion, which included direct costs such as medical care and indirect costs such as lost productivity and missed school days.(8)

What is asthma?

Asthma is a chronic inflammatory disease of the airways. When a person has asthma, the inside walls of the airways of the lungs are inflamed, making them more sensitive and more reactive than the airways of a person who does not have asthma. The airways may react to triggers, that in turn can cause an asthma attack or episode. An attack may be characterized by intermittent recurrent episodes of wheezing, coughing, breathlessness, and/or chest tightness. Asthma attacks are not all the same and can vary from mild to severe. Some people with asthma may require emergency care and if not managed well, asthma can be fatal.

The causes of asthma are not yet known. It is known that a variety of risk factors, including a genetic predisposition and environmental exposure, play a role in the development of asthma. However, the precise effects or how these factors interact with each other are not yet fully acknowledged.(6) It is known that asthma is closely linked to allergy and that children with a family history of allergy and/or asthma are more likely to develop asthma. Research also suggests that infections and exposures to tobacco smoke and allergens early in life contribute to the development of asthma.(4)

Asthma attacks are triggered by a variety of factors. In general, these factors are allergens, irritants, and infection, predominantly viral. Currently, there are no public health strategies to eliminate viruses, however allergens and irritants are potentially avoidable environmental triggers of asthma.

An allergen is a substance that can trigger an inappropriate immune response leading to sensitization of a genetically predisposed individual, and with re-exposure, can elicit asthma symptoms. Allergies increase asthma severity and morbidity in sensitized individuals with asthma. When a detailed history leads to the suspicion that specific allergens may trigger a person's asthma, skin test-

ing is important to support the clinical impression.

An irritant is a gas, vapor, fume, smoke, or chemical that can trigger an asthma episode. There is no medical test to identify irritant triggers, which may differ from person to person. Identifying triggers can be challenging since it may take hours before asthma symptoms develop after exposure to a trigger.

Considerable research has been conducted regarding the relationship between exposures to environmental hazards and asthma. Evidence suggests that a variety of potentially avoidable environmental hazards may induce asthma episodes or attacks. (Table 1)

ENVIRONMENTAL HAZARDS THAT CAN TRIGGER AN ASTHMA ATTACK

ALLERGENS

- House dust mites*
- Pet dander
- Some molds – (indoor & outdoor)*
- Pollen
- Cockroaches*

*dampness is a factor associated with these allergens

IRRITANTS – examples include:

- Environmental tobacco smoke (second-hand smoke)
- Unvented stoves or heaters
- Strong Odors – (e.g.: fragrances, household sprays, cosmetics, pesticides, formaldehyde)
- Cold air
- Smog and ozone
- Diesel engine exhaust
- Outdoor burning and wood smoke

Source: 9, 10, 11

Table 1

Effective asthma control

While we do not know how to prevent the development of asthma, we do know that the mortality and morbidity that accompanies this disease is largely preventable. Scientific research in the last decade has generated a body of information that, when used effectively to guide the care of patients, enables most persons with asthma to live healthy, normal lives.⁽²⁾ The National Asthma Education and Prevention Program (NAEPP), sponsored by the National Heart, Lung and Blood Institute (NHLBI), has developed Guidelines for the Diagnosis and Management of Asthma (Guidelines), which translates research findings into recommendations for patient care.⁽¹¹⁾

These Guidelines outline four basic components of effective active management:

- Objective measuring of lung function to assess the severity of asthma and to monitor the course of therapy
- Adequately managing asthma through pharmacologic therapy, tailored to the severity of the disease
- Controlling exposure to environmental hazards that trigger asthma symptoms or episodes
- Educating patients to become partners in their own care

When the Guidelines are followed, health care providers, caregivers, and individuals with asthma work together as partners to control the disease and reduce the frequency and severity of asthma attacks. These efforts are needed to improve the quality of life for persons with asthma and to interrupt the possible progression of this condition due to uncontrolled inflammation that may lead to functional limitations.

The availability and use of the Guidelines alone, however, does not ensure that the burden of asthma will be reduced. Asthma control needs to include coordinated efforts in the domains of

health care delivery/access/recognition, environmental control, and education. Ongoing and targeted education is necessary to promote effective implementation of the Guidelines. Further, barriers to health care access, identification of persons with poorly controlled asthma, and environmental factors need to be addressed simultaneously.

Populations and communities with the greatest burden of asthma often lack access to quality medical care, education about asthma management, social support systems, and/or the resources to obtain sufficient medications or equipment.⁽⁷⁾ Additional burdens are inadequate housing and environmental conditions that lead to exposures that can worsen asthma. Limited asthma surveillance at the state and local levels hampers public health efforts to direct quality health care toward the most severely affected populations.⁽⁷⁾ Even with high quality care, some cases of asthma are particularly difficult to control. In addition, patient barriers, such as cultural factors, lack of information, underuse of self-management, and over-reliance on acute care exist.

Learning how to manage asthma as a chronic disease can be a major challenge for patients, as well as for health care providers and others involved in asthma care. Medications that control asthma must be used in specific ways and at specific times. Although it is possible to identify triggers, the episodic nature of asthma makes it difficult to predict when an attack will occur. Treatment tends to be more crisis-oriented with the perspective that asthma is only present when there are symptoms. This makes adherence to daily management regimens particularly difficult. Follow-up care with a physician is important and many persons with asthma do not see their health care providers with enough regularity. In fact, many individuals with asthma do not have a medical home.

Comprehensive and coordinated solutions

Asthma is a multi-faceted public health issue for which there is no simple, easy, one-time solution. The complexity of this public health problem requires solutions that involve many different organizations and sectors across Indiana. The disease challenges not only the health care systems but also schools and the many public and private organizations that provide asthma education and other

Improving care for Hoosiers with asthma will require a multi-disciplinary approach and improved coordination of both state and local efforts.

community-based interventions and programs.

Partnerships are essential for addressing the barriers to reducing the asthma burden, particularly among vulnerable populations. Working with local communities to mobilize

resources for a comprehensive and culturally competent approach to controlling asthma among high-risk populations must be a priority.⁽¹²⁾

Solutions designed to reduce the burden of asthma require:

- improving the identification of persons with the disease
- assisting persons in adhering to their management regimens
- addressing cultural barriers, increasing access to quality medical care and supportive outreach services
- providing resources to identify and reduce environmental hazards

Moreover, surveillance is essential to understand the patterns of disease, the populations most affected, and how to plan and evaluate programs.⁽²⁾

Indiana's planning process

While many efforts to address Indiana's asthma burden are in place or progressing, a need was recognized for a more focused and comprehensive approach that unified the broad array of public and private entities involved with asthma. Thus, in 2001, ISDH, in collaboration with IDEM, applied for partnership funding from the Centers for Disease Control and Prevention (CDC) National Asthma Program. The National Asthma Program supports the goals and objectives of Healthy People 2010 for asthma (see Appendix) and is based on the following three public health principles:

- Tracking: collecting and analyzing data on an ongoing basis to understand the “who, what, and where” of asthma
- Interventions: ensuring that scientific information is translated into public health practices and programs to reduce the burden of asthma
- Partnerships: ensuring that all stakeholders have the opportunity to be involved in developing, implementing, and evaluating local asthma control programs

The ISDH received CDC partnership funding in 2002 to develop an asthma control plan that includes statewide collaboration, surveillance, and intervention, as well as environmental health and occupational health components. In addition, ISDH and IDEM received funding from the Environmental Protection Agency, Region 5 Children's Health Office to develop a web-based tool on environmental hazards relating to asthma.

The InJAC includes volunteer representatives from over 50 state agencies, health care professionals, educators, local public health agencies, managed care plans, hospitals, schools, environmental groups, and other community-based organizations

and individuals concerned with the prevention and control of asthma in Indiana. The Steering Committee made up of the Coalition chairperson, workgroup chairpersons and personnel from ISDH and IDEM directed the development of the plan. The Coalition divided into five workgroups with the following goals and directives:

- Data and Surveillance – utilize asthma data (surveillance, epidemiological, behavioral, environmental, and financial) and research findings to guide planning and intervention strategies
- Public Education – assess and address the asthma burden among the general population by assuring the availability of necessary information, materials and resources
- Children and Youth – assess and address the asthma burden among individuals eighteen years of age and younger
- Environmental Quality – use environmental and sensitive population information to guide the planning and intervention activities of InJAC
- Health Care Provider – assess and address the asthma burden in Indiana by improving the adherence to the recommended asthma care guidelines.

Each of the five workgroups met at least monthly to develop goals, objectives, and strategies. Considerable time was devoted to prioritizing the goals and objectives, making the objectives measurable, and establishing implementation time frames. Quarterly meetings of the Coalition were held to discuss and review progress on the state plan and to discuss collaborative efforts among the workgroups.

The following principles guided the development and decision-making process of each of the workgroups:

- The work of InJAC will be to reduce the burden of asthma, focusing on secondary prevention.
- The InJAC will focus on those persons in Indiana who have asthma.
- Data and evidence-based science will guide and support all InJAC state plan recommendations.
- The InJAC state plan will provide direction regarding public health surveillance for asthma.
- The InJAC state plan recommendations for reducing the asthma burden will acknowledge regional and demographic differences as well as cultural diversity.
- The InJAC state plan will make public policy recommendations for reducing the asthma burden.
- The InJAC state plan will define measurable outcomes.
- The InJAC workgroups will make optimal recommendations to reduce the burden of asthma for Indiana.

The process undertaken to develop this statewide plan helped to ensure alignment of InJAC goals with those of Healthy People 2010 and national consensus guidelines, as well as the goals of the ISDH and IDEM related to asthma. In developing the plan, InJAC considered available Indiana-specific data, evidence-based interventions and concurrent organizational initiatives related to asthma. Making the plan useful, manageable, and user-friendly was also a primary goal.

The efforts of InJAC that began in early 2003 culminated in the development of this document: *A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)*. This five-year plan establishes goals, objectives, and strategies for the state that can be used by organizations, professions, and individuals so they can join the InJAC's efforts to improve the health of Hoosiers with asthma.

Purpose of the Indiana Asthma Plan

The *Indiana Asthma Plan* establishes a course of action, priorities, and expectations for each of the collaborating organizations as they address the array of issues related to asthma. It provides Hoosiers with an ambitious and comprehensive approach to improving the health and quality of life for those with asthma while at the same time offering practical strategies that can be implemented within five years and sustained thereafter. The *Indiana Asthma Plan* is a public document that can be used to articulate a unified message and approach for reducing the burden of asthma in the state of Indiana.

The goals, objectives, and strategies of the *Indiana Asthma Plan* span health care settings, schools and early care settings, workplaces, indoor and outdoor environments, and the homes and buildings in which persons with asthma live or visit. Planned strategies range from conducting a statewide public education campaign to providing targeted education with health care providers, persons with asthma, schools and early care settings, to addressing the environmental factors that contribute to asthma. Key to implementation of these strategies is enhancing Indiana's data surveillance system to provide the information necessary to implement and evaluate new and ongoing initiatives.

Mobilizing the resources in Indiana to develop the *Indiana Asthma Plan* has been a successful effort. However, to achieve all that is proposed will require additional resources, broad involvement, innovation, and focused action. As planning moves into implementation, the collaborative approach undertaken in plan development will be sustained and new partner organizations will be contacted to join InJAC efforts. By working together, the burden of asthma will be decreased for both persons with asthma and the communities in which they live.

The *Indiana Asthma Plan* is to be considered a work-in-progress. During the course of workgroup deliberations, many worthwhile objectives and strategies were discussed that are not included in this document. Given the necessity to prioritize resources and efforts within a five-year time frame, these issues remain important and will be considered in the future. Initial workgroup recommendations are available on the InJAC website. Further, InJAC will assess the *Indiana Asthma Plan* annually and revise it as needed to help ensure that it continues to address asthma effectively in Indiana and improves the quality of life of Hoosiers with asthma.

The remainder of this document describes InJAC's planned and focused public health response to asthma in Indiana. Following a description of the burden of asthma in Indiana, the goals, objectives, and strategies of each workgroup are presented along with background information and rationale for the selection of specific approaches. Performance measures and target dates are also included. The *Indiana Asthma Plan* concludes with a description of the implementation evaluation plan.

Indiana's asthma burden

Asthma is an important public health problem in Indiana. To better understand the scope of the problem and the burden related to the disease, the Indiana Joint Asthma Coalition (InJAC) Data Collection and Surveillance Workgroup, in collaboration with the Indiana State Department of Health, produced an initial report titled *The Burden of Asthma in Indiana*. This report, available at www.in.gov/isdh/, includes a collection of available baseline data such as prevalence, severity, and cost. Data from this report assisted InJAC in determining the focus of intervention and control strategies as outlined in *A Strategic Plan for Addressing Asthma in Indiana*.

This chapter summarizes the findings of *The Burden of Asthma in Indiana*. Because of limitations and gaps in available surveillance data, understanding the scope and burden of asthma in Indiana is not yet complete. This is related to findings that data collection methods may be imperfect, additional data sets are needed, particularly related to children, some data apply only to certain populations, and different sources of data require different case definitions for asthma. Nonetheless, these data paint a picture of the asthma burden that can guide new initiatives in asthma control and track improvements as these initiatives move forward. The following chapter, *Data and Surveillance*, outlines plans for improving the overall surveillance of asthma in Indiana to obtain a more complete picture of the burden in our state.

The chapter is organized to answer the following questions:

1. Who has asthma in Indiana?
2. How severe is asthma in Indiana?
3. What are the costs of asthma in Indiana?
4. How well do we care for those with asthma in Indiana?
5. How do environmental hazards contribute to asthma in Indiana?

To answer these questions, four primary sources of data were utilized:

- **Behavioral Risk Factor Surveillance System (BRFSS)** – data obtained from an annual telephone survey developed by the Centers for Disease Control and Prevention.⁽¹³⁾ The BRFSS survey, conducted in all 50 states, is designed to monitor the prevalence of the major behavioral risks associated with premature morbidity and mortality among adults. Beginning in 2000, two questions related to asthma were included in the core section of the survey: “Have you ever been told by a doctor, nurse or other health professional that you have asthma?” (Lifetime Prevalence) and “Do you still have asthma? (Current Prevalence). Only non-institutionalized civilian adults (ages 18 and over) with residence telephones are included in the survey. Prevalence rates from the BRFSS are based on respondents’ self-reported diagnoses of asthma. In 2001, the

Indiana's asthma burden

Asthma History module was included. This module collected additional information on asthma, including age when diagnosed, severity information and the number of children under age 18 in the household who have been diagnosed with asthma.

- **Medicaid administrative data** – data obtained from the Indiana Office of Medicaid Policy and Planning (OMPP) that includes 2003 health care claims for adults and children in the Medicaid or Hoosier Healthwise programs. In 2003, 478,000 children in Indiana were enrolled in Medicaid (28% of all Indiana's children). Medicaid data include claims for hospitalizations, emergency department visits, doctor visits, and medications. OMPP case definitions were used to determine Medicaid prevalence data. This case definition includes any ICD-9 diagnosis code of 493 or at least 3 prescriptions for asthma medicine(s), based on claims incurred during fiscal year 2003.
- **Hospital discharge data** – data obtained from the Indiana Hospital & Health Association that includes information on hospitalizations throughout Indiana with a discharge diagnosis of asthma. Aggregate hospital inpatient discharge data is available from 1995 to present. Record-level hospital inpatient and outpatient data became available starting in 2002.
- **Mortality statistics** – data obtained from death certificates, reported to the Indiana State Department of Health. Mortality data (cause of death) is available from 1985 to present.

Who has asthma in Indiana?

The prevalence of asthma in Indiana is similar to national levels. According to the 2002 Indiana BRFSS, 7.5% of Indiana adults currently have asthma, which is identical to the overall U.S. statistic. Between 11% and 12% of adults in Indiana responded yes to being told that they have ever had asthma, which is similar to the U.S. proportion. Based on the BRFSS, the prevalence of asthma in Indiana has remained relatively stable from 2000 to 2002.

Asthma appears to disproportionately affect certain subgroups in Indiana. The self-reported prevalence of current asthma when compared to whites (7.1%) was lower among Hispanics (5.6%), and higher among non-Hispanic multi-racial (13.5%), African Americans (12.2%) and other (10.9%) racial categories.

Individuals from households with incomes below \$15,000 were more than twice as likely to have asthma as those with incomes above \$50,000, based on self-reported BRFSS data. Individuals with less than a high school education also reported higher asthma rates than individuals with a high school education or post-high school education. Asthma was also reported at a higher rate by unemployed individuals (10.1%) than by employed individuals (6.7%).(13)

THE PREVALENCE OF ASTHMA IN INDIANA

In 2002, an estimated 341,000 adults in Indiana aged 18 and over had asthma.

An estimated 514,000 adults in Indiana had been diagnosed with asthma during their lifetimes.

Indiana's asthma burden

More than two-thirds of Indiana adults with asthma are women according to the 2002 BRFSS. The reported rate of asthma among adult women was 9.8%, nearly twice the 5.1% prevalence among adult men. Hospitalization data showed the largest number of asthma hospitalizations among adults were in women, ages 40-49, with numbers nearly as large in women 50-59 and 30-39. This pattern was seen across all race/ethnic categories.

The BRFSS data also show a possible association between obesity and asthma. The prevalence of asthma among respondents identifying themselves as obese [Body Mass Index (BMI) >30] was 10.1%. The prevalence of asthma among normal weight respondents (BMI 18.5-25) was 6.5%, and 6.3% among overweight respondents (BMI 25-29.9).

Indiana Medicaid data shows a wide variation in the prevalence of asthma among the counties of Indiana, from a low of 7.3% in Elkhart County to a high of 17.3% in Daviess County. Despite speculation about health risk behaviors or environmental exposures, the reasons for the variation are not currently known. Further, the prevalence estimates for large counties (e.g. Marion County) may be artificially low because there could be underreporting

of shadow claims data from the Medicaid managed health care organizations in those counties.

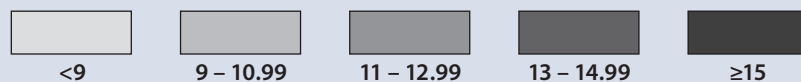
Currently, there is little data available to indicate asthma prevalence rates among children. The BRFSS survey is limited to individuals over the age of 18. The only BRFSS data available related to children is from the 2001 survey in which 30.1% of people with asthma responded that they were diagnosed before the age of 10, and 15.7% of Indiana households reported having at least one child who has ever been diagnosed with asthma. Analysis of Medicaid data shows an asthma prevalence rate of 10.4% for Medicaid enrollees ages 0-17, who were enrolled at least 11 months during 2003. However, prevalence rates for Medicaid enrollees cannot be generalized to the population as a whole.

How severe is asthma in Indiana?

There is both good news and bad news about what has happened to the severity of asthma in recent years. Asthma deaths in Indiana have declined since 1997, roughly 28%. Longitudinal data gathered by the Indiana Hospital & Health Association show that hospitalization rates have also declined, almost 18% since 1997. Consistent with the de-

ASTHMA IN INDIANA

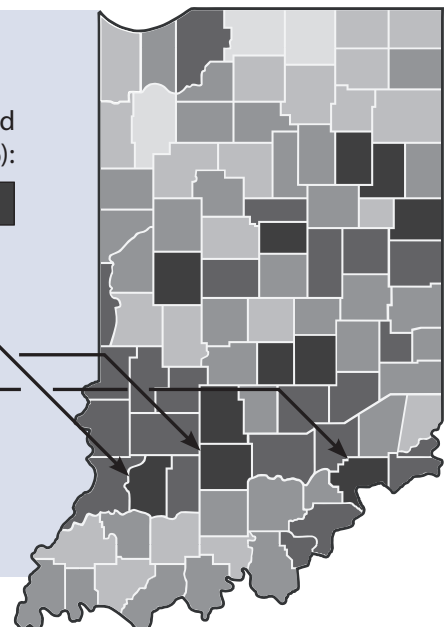
This map illustrates the estimated prevalence of asthma for Medicaid enrollees in Indiana for each county. The scale of prevalence is in (%):



The three counties with the highest prevalence of asthma are:

Daviess (17.3%)
Lawrence (17.1%)
Jefferson (17.0%)

NOTE: This data is from the 2003 Medicaid cohort for all ages for individuals that were enrolled at least 11 continuous months during the year.



Indiana's asthma burden

demographic trends in asthma, Medicaid data show hospitalization rates for asthma are higher in African Americans than in whites. The highest rate of hospitalizations was among children, especially boys under 5 years of age.

Other measures indicate however, that the severity of asthma is significant in Indiana. Among the Medicaid population who met the OMPP case definition of asthma (claim indicated any diagnosis of asthma) nearly 56% met the definition of “persistent asthma” from the National Committee for Quality Assurance (NCQA), meaning that their asthma warrants daily therapy. Persistent asthma, as defined by NCQA includes persons with any of following: four dispensing events for asthma medicine(s); at least one ER visit with a principal diagnosis of asthma; at least one hospital stay with a principal diagnosis of asthma; at least four office visits with asthma as a diagnosis and two asthma medicine dispensing events.

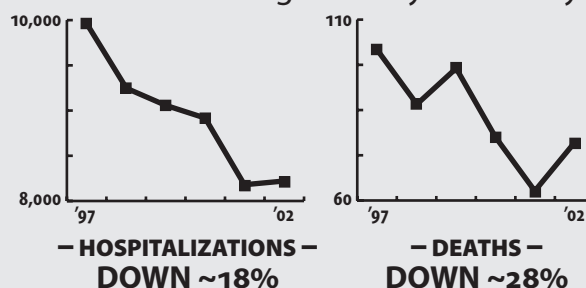
Among children with persistent asthma enrolled in Indiana Medicaid, 10% were hospitalized with asthma and 28% had at least one emergency room visit for asthma (claim indicated any diagnosis of asthma). Further, according to Indiana's 2001 BRFSS survey, in which an optional Asthma History Module was included:

- 17.3% of respondents who have asthma report having symptoms every day
- 54.9% of respondents with asthma said they had an asthma attack in the last year
- 17.9% say they went to the emergency room or urgent care center in the past year
- 29.5% of respondents said they were seen by a health care professional in an unscheduled visit for urgent treatment of their asthma.

What are the costs of asthma in Indiana?

The burden of asthma in Indiana is defined by its impact on the person diagnosed with the dis-

THE RIGHT DIRECTION
Indiana's asthma-related hospitalizations and deaths are down significantly in recent years.



ease, as well as the impact on the family, caregivers, and the community. Although many people often speak only of the monetary costs of asthma, the burden also includes costs to the quality of life.

Monetary costs

From a financial perspective, asthma is a costly disease. The 2003 financial cost for Indiana Medicaid enrollees with asthma (who are not enrolled in a managed health care plan) is estimated at nearly \$33 million, based on claims paid for hospitalizations, doctor visits, emergency room visits, and prescriptions used to treat asthma. This represents only direct medical costs to the Medicaid program, which is a fraction of the total cost attributable to asthma in Indiana. It does not include costs for commercially insured or uninsured individuals, or Medicaid managed care enrollees. Further, the number does not include the indirect costs from lost work, travel, childcare, and the myriad of other costs that accompany chronic disease.

Quality of life costs

Asthma also appears to be costly for Hoosiers from a quality of life perspective. Data derived from the BRFSS survey begin to illustrate some of the impact of asthma on quality of life.

Adults with asthma rate their own health lower than do those without asthma. In comparison to adults without current asthma:

- 35% fewer adults with current asthma reported their health was very good or excellent
- Nearly twice as many adults with current asthma reported their health as poor
- More adults with current asthma reported 'feeling well' fewer days per month
- Almost 3 times as many adults with current asthma reported feeling depressed every day
- More adults with current asthma reported feeling stressed and fewer adults with current asthma reported feeling rested

Whether these problems are caused by asthma cannot be determined from the data, but an association with asthma appears to exist.

How well do we care for those with asthma in Indiana?

Based on the consensus guidelines of the National Heart Lung and Blood Institute (NHLBI), persons with asthma should have routine visits to the physician twice a year. Medicaid data indicates that the majority of Medicaid children and adults do not receive this recommended level of care. Among Medicaid children with persistent asthma, 39% had no claims for office visits and 22% had only one visit. Among Medicaid adults with persistent asthma, 65% had no claims for office visits and 16% had only one visit.

Indiana's BRFSS data indicate that only 52.5% of respondents with current asthma reported they had at least one routine checkup for their asthma in the past 12 months, and over 27% report having no medical care in the preceding year. In fact, 13% reported being unable to get medical care at all in the previous 6 months.

When asked what their usual source of care was, 74% of those with current asthma and 78% of those without current asthma reported the doctor's office. However, those with current asthma reported using public health clinics at a rate about 50% higher

than those without current asthma. Respondents with current asthma also reported using an emergency room as their usual source of medical care at a rate nearly twice the rate of those without current asthma. The use of an emergency room as the usual place of care makes continuity of care for a chronic condition very difficult, resulting in less than optimal care for persons living with asthma.

Two markers of quality of asthma care are the rate of influenza (flu) vaccination and the use of controller medications. Flu vaccines are recommended for all people with asthma. In Indiana, over 65% of people with asthma had no flu shot, according to the 2002 BRFSS survey. The NHLBI guidelines recommend daily controller medications (e.g., inhaled steroids) for anyone with "persistent asthma." This would mean several controller prescriptions should be prescribed and filled annually. Yet, in a cohort of Medicaid children who met the NCQA criteria for persistent asthma, nearly 40% of them had not received inhaled steroid medication at all, and, of those who did receive medication, most had only one or two prescriptions filled.

The evidence indicates that there are many opportunities to reduce the burden of asthma in Indiana. Based on available data, those in Indiana with asthma would benefit from improvements to both access to, and the quality of care provided.

How do environmental hazards contribute to asthma in Indiana?

As outlined in the previous chapter, evidence suggests that a variety of environmental hazards can induce asthma episodes or attacks. For most of these hazards, there is little available data to determine the extent of the problem in Indiana or how these hazards affect Hoosiers with asthma. The Indiana Department of Environmental Management (IDEM) does monitor outdoor pollutants and data indicates that Indiana routinely has days of high ozone concentration during the summer – urban areas typically have five to fifteen high

Indiana's asthma burden

ozone days per summer.⁽¹⁴⁾ Currently the monitoring networks, established on federal guidelines, are limited in geographic coverage, however are in strategic locations where the levels are expected to be the highest. The U.S. Environmental Protection Agency (EPA) has set national standards for fine particle matters (PM_{2.5}) at 65 micrograms per cubic meter (µg/m³) for a daily average and 15 µg/m³ for an annual average.⁽¹⁵⁾ Annual averages in Indiana range from 14-16 µg/m³ and daily values are well below EPA's standard of 65 µg/m³.⁽¹⁴⁾

One of the most significant environmental hazards affecting persons with asthma is environmental tobacco smoke (ETS). More than 1.2 million adults in Indiana smoke cigarettes, or 27% of the State's adult population. Indiana ranks fifth among all states in adult smoking prevalence and is consistently higher than the U.S. average adult smoking rate of 23%. The smoking rate among high school students is 23% and among middle school students is 9%.⁽¹⁶⁾ Further, the number of Indiana workers covered by a smoke free policy is roughly 60%, ranking Indiana 49th of all states.⁽¹⁷⁾

The BRFSS 2000 survey provided some data on ETS exposure among adults in Indiana. Over 30% of Indiana adults with current asthma were smokers. This rate of smoking was higher than that of people without asthma. Even among those who did not smoke, there was some risk of smoke exposure at home or at work. BRFSS respondents with current asthma reported that in 26% of their homes and over 10% of their workplaces, there were either no rules governing smoking or no rules that prohibited smoking in all areas.

Summary

This chapter confirms that asthma is a major health problem in Indiana. Adults in Indiana experience asthma at about the same rate as adults in the US overall. Asthma disproportionately affects women, certain minorities, and the poor. Although the severity of asthma, based on hospitalizations and deaths, appears to have improved in the last seven years, a large proportion of Hoosiers still suffer from severe asthma and more hospitalizations could be avoided. The consequences of asthma are financially costly and are associated with decreased quality of life indicated by higher reported rates of depression, stress and poor self-rated health status among those with the disease. Barriers to access to health care and deficiencies in asthma management can compromise quality outcomes for persons with asthma. The effect of environmental pollutants on asthma needs further investigation, but environmental tobacco smoke very likely contributes to the asthma burden in Indiana, especially among children.

Additional tracking of the occurrence of asthma and asthma events is necessary to improve the understanding of individual and environmental factors that contribute to the burden. Information gleaned from analyzing data such as presented in *The Burden of Asthma* in Indiana is critical to planning, implementing and evaluating activities directed towards reducing the burden. By continuing to enhance existing means of data collection as well as adding new sources of data to fill existing gaps, our understanding and management of the burden of asthma in Indiana will become more comprehensive over time

Background

Over the last decade, the problem of asthma has been the focus of programs and reports from governmental agencies (e.g., the National Heart Lung and Blood Institute's National Asthma Education and Prevention Program and the U.S. Department of Health and Human Services' Action Against Asthma report) and nongovernmental commissions (e.g., the Pew Environmental Health Commission's Attack Asthma report). A common characteristic of these reports and programs is a call for improved asthma surveillance.

An asthma surveillance system that can capture condition-specific information at the national, state, and community levels is an essential tool for promoting access to quality asthma care and improving the health of persons with asthma.⁽⁶⁾ Surveillance, the systematic collection, evaluation, and dissemination of data used to track the occurrence and severity of particular diseases, is critical to research and public health practice.⁽⁷⁾

Program planning and evaluation require disease surveillance.⁽²⁾ Surveillance emphasizes data sources that are ongoing and can provide timely information on disease prevalence. As surveillance efforts continue over time, new data can be compared to the baseline data. Ongoing monitoring and evaluation helps ensure that effective asthma prevention and control strategies are continued and enhanced while ineffective strategies are changed or discontinued. Data on trends can also show where new intervention strategies are needed.

In summary, surveillance activities provide the information necessary to understand the nature and scope of asthma so that a plan for disease management, intervention, control, and prevention can be devised, implemented, and evaluated.

Rationale

In identifying and developing the goals and objectives for *A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)*, the Data and Surveillance Workgroup determined the need to focus on developing and implementing a comprehensive asthma surveillance plan. Provisions for surveillance enhancement, ongoing evaluation, and information sharing were included. Strategies were selected to address the following:

Data

Currently, Indiana asthma surveillance involves the collection of prevalence, severity, and cost data using four primary sources: The Behavioral Risk Factor Surveillance Survey (BRFSS), Medicaid claims data, hospital discharge data, and mortality statistics. There are intrinsic limitations in the available data, making Indiana's current view of asthma somewhat imprecise, resulting in an incomplete picture of the burden of asthma. For example, available claims data describing patterns of health care are limited to Medicaid recipients. Hospital discharge data before 2002 are not individually identifiable, making it impossible to trend repeat

data and surveillance

hospitalizations. Currently, only one full year of individually identifiable hospital discharge data is available for analysis. Geostatistical analyses, the linkage with environmental data, are needed to examine the correlations between air pollutants and asthma burden. Few data exist on indoor pollutants affecting asthma, and the schools' efforts in preventing or responding to asthma among students is largely unknown.

Surveillance

Indiana is in need of a comprehensive and structured asthma data surveillance system that will be ongoing. Both data and staffing resources have been limited for conducting surveillance and analysis. While current data paint a picture of asthma that begins to guide new initiatives in asthma control, a more coordinated and well-funded effort will be necessary to create a system that captures reliable real-time data on the prevalence, incidence, and severity of asthma, and quality outcome measures related to the management of asthma.(6)

The challenges of instituting a more comprehensive system are to locate data sources that include information that is more detailed. This would enable Indiana to identify target populations in significant need of intervention and to evaluate the effectiveness of current interventions to reduce the burden of asthma. Enhancements to the ongoing surveillance system will require secondary analysis and primary data collection. The Data and Surveillance Workgroup will work toward identifying gaps in present data sources describing the asthma burden and accessing additional data sources. Surveillance should be expanded to include data points, such as, relative information on school-aged children, indoor air quality, work-related and environmental hazards, provider knowledge and practices, clinical measures, and specific popula-

tion in various geographic locations. Establishing a data review subcommittee to the statewide asthma coalition will assist in developing a surveillance plan, provide access to additional sources of data, and help with data interpretation.

Access

It is critical that the Indiana Joint Asthma Coalition (InJAC), health care providers, policy makers, families, and anyone concerned with asthma in our state have timely access to data relevant to the asthma burden in Indiana, including racial, geographic and socio-economic disparities, to ensure the delivery of accessible, effective services. Informing policy makers of Indiana's asthma burden enables them to make sound decisions about providing resources to address the disease. The proposed asthma surveillance system will provide data sources that will be used to evaluate the effectiveness of interventions identified in the *Indiana Asthma Plan*. Policies and procedures, as well as Health Insurance Portability and Accountability Act (HIPAA) compliant data sharing agreements, will be implemented to conduct surveillance activities according to federal and state privacy and confidentiality laws, thereby ensuring the privacy and confidentiality of medical data. Standardization of data definitions for asthma surveillance activities, using national standards whenever possible, along with explanations regarding application of the data is important to assure comparability and accurate interpretation for each data set.

A comprehensive, sustainable asthma surveillance process and establishment of a mechanism for sharing data sources with interested stakeholders will enhance progress toward implementing effective interventions that ultimately will reduce the asthma burden in Indiana.

Goals, objectives, and strategies

Goal 1 Establish sustainable, ongoing monitoring and evaluation of the asthma burden in Indiana.
Lead Agency: ISDH

Objective 1 By 2006, enhance statewide asthma surveillance through identification of gaps in data, improved coordination and accelerated development of data.

- Strategies**
- 1** Solicit, inventory, and review the data needs from the chairpersons of the other InJAC workgroups.(Children and Youth, Environmental Quality, Health Care Provider and Public Education)
 - 2** Identify key users of asthma data in Indiana and review their data needs.
 - 3** Identify gaps in present data collection and identify potential data sources to fill these gaps.
 - 4** Establish standardized data definitions, data analysis methods, and surveillance standards, utilizing nationally recognized definitions as applicable.

Objective 2 By 2007 and annually thereafter, make improvements in the surveillance system—fill gaps by incorporating additional data sources and, when necessary, designing new data collection.

- Strategies**
- 1** Form a review committee consisting of individuals with knowledge of existing data sources and expertise in secondary data analysis and primary data collection.
 - 2** Conduct regular meetings of the review committee:
 - Identify secondary analyses and primary data collection necessary to fill in data gaps
 - Determine the feasibility of obtaining additional data
 - Develop priorities based on cost and importance
 - Design data collection, extraction, and analysis strategies; establish fact-finding activities between committee meetings
 - 3** Develop HIPAA and statutory compliant data-sharing agreements with partnering agencies as appropriate.

- 4** Extract, merge and analyze data from other sources. Sources relevant to asthma include:
 - Environmental (e.g., air quality and emissions data)
 - Educational (e.g., school environment reports)
 - Health system economics (e.g., health insurance organizations, health plans, health payers)
 - Work-related asthma
- 5** Utilize geographical information systems (GIS) techniques to associate data from different sources (e.g. census data with air quality and emissions data).
- 6** Conduct primary data collection for those data elements not available from current sources. This process will involve identifying existing data collection instruments and developing new instruments.

Goal 2 Coordinate the ongoing evaluation of the *Indiana Asthma Plan*.
Lead Agency: ISDH

Objective 1 By 2006, develop and implement a review, at least annually, of the *Indiana Asthma Plan*.

- Strategies**
- 1** Develop a comprehensive work plan of evaluation measures outlined in the individual InJAC workgroup sections of the *Indiana Asthma Plan*.
 - 2** At least annually, each InJAC workgroup will submit a draft of its planned activities and ways to evaluate their effectiveness.
 - 3** The Data and Surveillance Workgroup and the InJAC Steering Committee will evaluate the drafts submitted by the various workgroups and provide advice and oversight regarding evaluation of the *Indiana Asthma Plan*.

Objective 2 By 2008, develop partnerships with organizations external to InJAC that are collecting data that can be used in evaluating Indiana's asthma burden.

- Strategies**
- 1** Identify a list of potential partners to be involved in statewide surveillance efforts. Identify common interests and potential areas for collaboration.
 - 2** Work with interested health plans, insurers, and health care providers to develop a comprehensive source of data to evaluate measures implemented to reduce the burden of asthma and improve the quality of asthma care.
 - 3** Incorporate partner data into statewide surveillance and evaluation process.

Goal 3: Develop mechanisms for sharing information from surveillance and evaluation.

Lead Agency: ISDH

Objective 1 By 2006 and at least annually thereafter, disseminate a report on the burden of asthma in Indiana, including new data sources.

- Strategies**
- 1 Identify recipients and develop a dissemination plan for the asthma burden report.
 - 2 Include identification of racial, geographic, and socio-economic disparities.
 - 3 Develop guidelines to assist with interpretation of the completeness, accuracy, comparability, timeliness, accessibility, and usefulness of the results to readers.

Objective 2 By 2007, make available a database of databases, linking users to all data sources relevant to the burden and control of asthma in Indiana.

- Strategies**
- 1 Identify an appropriate database platform.
 - 2 Assist in the design of the database schema and the initial content of the database.
 - 3 Establish designated staff resources.
 - 4 Develop a database that contains data sources (i.e., those contained in *The Burden of Asthma in Indiana* report) as well as information about the contents of these data sources, contacts for accessing the data sources, and electronic links to those data that are publicly available.
 - 5 Update the database when new data sources become available.

Objective 3 By 2007, develop and disseminate policies and procedures for updating, accessing, and using the data in the database.

- Strategies**
- 1 Establish a data oversight committee that will include individuals with knowledge of information technology and relevant data sources related to asthma.
 - 2 Establish processes for reviewing new data for inclusion in the database and for incorporating those data.
 - 3 Develop policies and procedures by which interested stakeholders may access the database of databases and which data will be available to which stakeholders.
 - 4 Conduct selected evaluations of the effectiveness of policy and procedure implementation.

Background

Asthma is a complex illness. It has been demonstrated that medical approaches alone do not result in adequate asthma care. Educational programs that focus on increasing knowledge about asthma and improving asthma self-management skills have been shown to be effective in helping to establish proper control.⁽¹⁸⁾

Successful asthma management requires patients and families to carry out complex treatment regimens, institute environmental control measures, take medications correctly (and at appropriate intervals), detect and self-treat most asthma attacks, and communicate appropriately with health care providers. Education is a key mechanism through which patients and their families learn to successfully accomplish these tasks.⁽¹¹⁾ Teaching asthma self-management skills to patients and their families helps develop the motivation, skill, and confidence to manage asthma.

Asthma education has been shown to be cost-effective in reducing morbidity for both adults and children.^(11,19) Studies of asthma education and self-management training are so consistent in showing benefit that both are recommended in the National Guidelines for the Diagnosis and

Management of Asthma (NHLBI). The NHLBI guidelines recommend that patient education begin at the time of diagnosis and is reinforced at every opportunity. Although the guidelines emphasize the importance of provider to patient education, the value of supplementing such education with community-based educational programs and activities is also important.^(11,20, 18)

Public awareness can promote the ability of lay people to recognize asthma, thereby increasing the chances of seeking appropriate health care early and minimizing the risks posed by potentially life-threatening situations when they occur.⁽⁷⁾ Public education efforts have been effective in addressing individual behavior change and public policy ^(21,7). Improved public awareness of asthma can promote collaboration among the health care, environmental, education, business, and social service sectors as they work towards the improvement of asthma care in their community. As the public gains a better awareness and understanding of the effects of the environment on asthma, there should be greater support for interventions to better protect persons in their homes, outdoors, at school, work, or other places they visit.

Rationale

In developing public education goals and objectives for *A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)*, the Public Education Workgroup established the need to focus on increasing public awareness of asthma as a serious chronic disease and on improving the knowledge and skills of patients regarding the detection, treatment, and control of asthma, particularly among high-risk populations. Asthma education strategies adopted by the Public Education Workgroup incorporate well-established and evidence-based principles that have been shown to be effective methods of delivering health education. Workgroup goals, objectives and strategies were established to address the following:

Asthma Education and Public Awareness

The general public, policy makers, and even persons with asthma and their families are often not aware of the magnitude of the asthma burden; namely its symptoms and triggers, and what is required to successfully manage asthma. There is a need for more education and awareness activities to occur not only with health care providers and patients, but also with those who interact closely with persons with asthma in other settings, such as schools, child care facilities, churches, work settings, etc. A public awareness campaign with simple, consistent messages about asthma can maximize the effects of other asthma interventions, including reducing environmental hazards. For example, the Indiana Tobacco Prevention and Cessation program demonstrates the effectiveness of a statewide media campaign, in combination with other targeted community-based interventions. Since the implementation of the campaign in 2001, there has been a dramatic decrease in youth smoking among high school and middle school students

and the campaign was shown to have a significant positive influence on youth knowledge, attitudes and beliefs about tobacco usage.(21)

Asthma Information Resources

Currently, there is no easily accessible system for persons with asthma, their caregivers, and health care providers to obtain accurate, comprehensive information about asthma and to learn about available resources and support systems. While persons with asthma have remarkable access to health and medical information on the World Wide Web, the true benefit from asthma-related Web sites depends on the quality and accessibility of the information (22). There is a need to assure that resources and programs are evaluated for consistency with national guidelines and standards (e.g. NHLBI) before they are widely disseminated and to ensure that information provided meets readability and usability standards. Development of a web-based asthma resource guide is proposed to address these issues. The guide will provide persons with asthma who live in Indiana with readily accessible and evidence-based information to help in managing their disease as well as provide support for health care providers and other community-based organizations as they assist persons with asthma and their families and caregivers.

Access to Quality Asthma Education Program

Asthma patients and their caregivers do not have universal access to high quality, effective asthma education programming. Barriers to participation, such as inaccessible locations and cultural differences, need to be addressed in order for families to attend and fully participate in educational programs. There is also a need to target programming towards population groups most affected by

asthma and to address the unique circumstances of the community in which persons with asthma live. Upon identification of underserved and high-risk communities through surveillance efforts, the Indiana Joint Asthma Coalition (InJAC) Public Education Workgroup proposes that support be offered to assist these communities in increasing access to asthma educational programs offered at familiar neighborhood sites. For example, peer education programming, formation of local asthma coalitions, and planned outreach activities can be effective methods of reaching underserved communities. Resource materials will also be evaluated for readability, age appropriateness, and cultural sensitivity.

Peer Education and Social Support Networks

Research has shown that peer education is an effective strategy for teaching community programs and that African Americans may be especially responsive to social support in their own community for effecting change in health behaviors.(23,24) In particular, studies have shown that children learn health behaviors best from their “peers”.(20) Depending on the model selected, peer education involves training members of the community (such as parents of children with asthma, teens who will serve as peer educators for children’s classes, school nurses, child care workers, and community lay persons) to teach their peers about asthma and how to manage the disease. Peer educators are generally more culturally sensitive and more efficient in transmitting the necessary knowledge.(24) Peer education programs have demonstrated success in reducing asthma morbidity and in helping to reduce environmental triggers within the asthma patient’s surroundings.(23,24) Such programs can

assist in equipping Indiana communities with asthma educators who are knowledgeable about asthma and who can teach parents and children in their own community settings. Furthermore, this type of program can also help to ensure that community asthma education efforts are sustained.

Asthma Coalition Building

As the burden of asthma has increased, communities across the nation have mobilized local resources through the formation of community-based coalitions. An asthma coalition is an alliance of organizations and people representing an array of interests who unite around clear goals to promote asthma awareness and to provide education to the general public and people diagnosed with asthma. These coalitions have proven to be successful in promoting improved asthma awareness and care in their community and helping to maximize resources through coordination of activities.(25) Indiana currently has only one community-based asthma coalition, the Asthma Alliance of Indianapolis, but could benefit greatly through the formation of new coalitions in various locations throughout the state to establish a common vision and culture of collaboration around asthma awareness and intervention efforts. The Asthma Alliance of Indianapolis, for example, brings together Indianapolis corporations, health care delivery systems, insurers, and a variety of public health and social service providers and organizations to identify and implement innovative approaches to prevent and control asthma. The Alliance instructs students, school personnel, parents, and community groups about asthma. Each year it reaches approximately 150 groups and over 6,000 participants.

Goals, objectives, and strategies

Goal 1 Increase public awareness and understanding of asthma.
Lead Agency: ISDH

Objective 1 By 2007, launch a statewide public awareness campaign to increase the understanding of asthma as a public health issue.

- Strategies**
- 1** Identify public awareness campaign goals and population(s) to be targeted.
 - 2** Assess public awareness of asthma and current attitudes and beliefs about the disease through survey methodology.
 - 3** Collaborate with a media specialist to launch a multi-channel public awareness campaign and media kit that includes materials targeting high-risk, underserved populations.
 - 4** Evaluate media methods most effective for reaching diverse, underserved, and high-risk populations.
 - 5** Collect recommendations for key media messages from each of the InJAC workgroups.
 - 6** Develop a campaign plan and several key media messages, based on recommendations from InJAC workgroups and public survey results. Messages should be culturally and linguistically tailored to specific racial, ethnic, age, and socio-economic groups.
 - 7** Explore funding possibilities for a statewide media campaign.
 - 8** Evaluate feasibility of collaborating with other existing public health media campaigns to include key asthma messages (e.g. second-hand tobacco smoke).
 - 9** Identify and train one or more individuals to serve as statewide spokesperson(s) to promote asthma awareness during the media campaign.
 - 10** Determine various settings and opportunities within the community to promote key media messages, including message for high-risk populations (e.g. media outlets, Indiana Tobacco Prevention and Cessation (ITPC), local community partnerships, minority health coalitions, school districts).
 - 11** Assess changes in knowledge, attitudes and beliefs at the conclusion of the awareness campaign.

Objective 2 By 2007, develop and publish a web-based asthma resource guide to disseminate information on current asthma programs, services and resource materials.

- Strategies**
- 1** Utilize public awareness survey results to determine information needs.
 - 2** Develop an assessment tool to evaluate asthma resources, programs, and materials that are currently being used throughout the state for inclusion in an asthma resource guide. The tool will assist in evaluating usability, consistency with best practice asthma guidelines, and appropriateness for populations with asthma disparities.
 - 3** Obtain input from the InJAC workgroups and other persons and groups with relevant expertise in Indiana regarding resources that might be included in the guide.
 - 4** Collect, review, and evaluate recommended asthma educational materials, websites, programs, and other resources to help assure that appropriate resources are included. The guide should be applicable in a variety of educational settings such as schools, worksites, libraries, and health care provider offices and attentive to the specific needs of a diverse population (e.g. multicultural, multilingual, low-literacy, elderly, and persons with disabilities).
 - 5** Develop a distribution plan that addresses mechanisms for making the guide available to persons with asthma, families, health care professionals, health plans, and the community.
 - 6** Develop a brochure that provides information on the resource guide and references key media message(s) from public awareness campaign.
 - 7** Assemble the asthma resource guide and make available on the InJAC website in downloadable format.
 - 8** Collaborate with health care, education and community service partners/organizations to assist in promoting awareness of the guide.
 - 9** Develop mechanism to provide for ongoing updates of the asthma resource guide and website.

Objective 3 By 2008, plan and promote asthma outreach activities and events in 25% of Indiana counties to assist in providing the latest information on key educational messages.

- Strategies**
- 1** Coordinate with community groups/coalitions in planning specific activities or events to raise awareness of the asthma burden and need to improve asthma care. Support such events as World Asthma Day,

the EPA Fish Out of Water campaign, EPA Second Hand Smoke campaign, and the ALA Asthma Walk. Identified high-risk communities will be targeted.

- 2** Promote and facilitate the formation of local asthma coalitions similar to the Asthma Alliance of Indianapolis to increase the number of counties associated with asthma coalitions.
- 3** Assist in developing and/or promoting asthma education opportunities through local health departments, hospital outreach, local clinics, area agencies on aging, and other community-based organizations. Examples of educational opportunities include local or regional asthma summits, in-service training, and training programs for school nurses.
- 4** Educate local community leaders and policy makers regarding asthma issues and the impact on their constituents.
- 5** Disseminate statewide and county specific findings from asthma surveillance activities (e.g. press release, newsletter, asthma website).
- 6** Evaluate the impact of the interventions based on the number of Indiana counties participating in or conducting effective asthma outreach activities or events.

Goal 2 People with asthma and their families and caregivers will have the knowledge and resources to self-manage their disease.

Lead Agency: ISDH

Objective 1 By 2009, achieve a 10% increase in access to evidence based, quality health information for people with asthma.

- Strategies**
- 1** Collaborate with Health Care Provider Workgroup to obtain baseline information on patient access to education and resources to assist in managing their disease.
 - 2** Collaborate with Health Care Provider Workgroup and other health care professionals to help assure that resources included in the asthma resource guide and public awareness messages are consistent with accepted asthma guidelines and management goals at various levels of asthma severity.
 - 3** Partner with health plans, health care professionals, pharmacies, local health departments and clinics and other community groups to promote patient awareness of and access to the asthma resource guide.

- 4** Distribute asthma resource guide brochure (goal 1, objective 2) to health care provider offices, emergency rooms, health centers, pharmacies, schools and other community sites for dissemination to persons with asthma.
- 5** Provide targeted message(s) for people affected by asthma in state-wide media campaign (see goal 1, objective 1).
- 6** In collaboration with Health Care Provider workgroup, develop a quick reference guide for asthma diagnosis and treatment based on NHLBI guidelines. Disseminate to community partners such as school nurses, local health departments, and other health care professionals who serve persons with asthma.
- 7** Secure yearly funding for culturally and linguistically appropriate educational materials to be distributed at events serving persons with asthma.(e.g. Black and Minority Health Fair, Black Expo, Women's Expo, Indiana State Fair, health fairs, etc.)
- 8** In collaboration with Health Care Provider Workgroup, evaluate the effectiveness of education interventions for persons with asthma.

Objective 2 By 2009, provide information, assistance and tools to communities interested in implementing an asthma peer education program.

- Strategies**
- 1** Identify and evaluate existing evidence-based peer education models for implementation in local Indiana communities.
 - 2** In collaboration with partner organizations, disseminate information gathered about the peer education models to local health departments, schools, faith-based organizations, hospitals, and other community groups.
 - 3** Identify communities that are interested in implementing a peer education program.
 - 4** Facilitate implementation of community programs through technical assistance and identification of training opportunities for community health workers and peer educators who might serve as asthma educators.
 - 5** Evaluate effectiveness of information and assistance provided to communities in establishing peer education programs.

Background

In every classroom with 30 children, there are likely to be at least two children with asthma.⁽²⁶⁾ Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days annually. Asthma is more common in school-aged children than in preschool-aged children or adults, however, the most rapid increase in asthma cases has recently occurred in children under five years of age.⁽⁷⁾ The rise in pediatric asthma is likely due to a combination of factors: better recognition and diagnosis of the condition at younger ages; changes in the prevalence and distribution of risk factors (obesity, single parent families, poverty, racial minority status, and decreased physical activity); increased time spent indoors in tightly sealed buildings; and an increased prevalence of allergies.^(7,12)

The burden of asthma for children and their families is significant. It includes missed school days, parental loss of workdays, frequent hospitalizations, high medical costs, the psychological impact of living with a chronic disease, and the effects it has on intellectual development.^(6,7,27) Children who have had interrupted sleep due to nighttime asthma symptoms come to school tired. Furthermore, the side effects from some medications used in asthma treatment can interfere with performance and concentration, particularly when the child's medication regimen is not well-managed or monitored.⁽²⁸⁾ Exercise induced asthma presents its own set of problems for physical education classes and other physical activity.

Although the cause of asthma in children is uncertain, environmental factors are thought to trigger attacks. Environmental asthma triggers

often found in school buildings and early care settings are cockroach allergens and other pests, dust-mites, mold resulting from excess moisture in the building, second-hand smoke, and pet dander.⁽²⁶⁾ In addition, literature suggests children with asthma may be affected by other pollutants found in schools from such sources as unvented stoves or heaters and common products such as cleaning agents, perfumes, and sprays.⁽²⁹⁾ Children are especially vulnerable to respiratory hazards that may be in the air in and around their schools for a number of reasons. Children's immune and neurological systems are still developing, and because of their lower body weight, they breathe a relatively larger volume of air as compared with adults. In addition, because young children play closer to the ground, they are more likely to encounter contaminated dust on indoor floor surfaces.^(29,30) Therefore, reducing exposure to both indoor and outdoor environmental asthma triggers is an important step in controlling asthma in schools and early care settings.

Children and youth with asthma can function at their maximum potential if their asthma needs are met. Responding to the needs of students with asthma in the school or early care setting requires a comprehensive, coordinated, and systematic approach.^(26, 27, 31, 32) Schools and early care settings can work together with parents, students, health care providers, and the community to provide a safe and supportive educational environment for students with asthma and to ensure that students with asthma have the same educational opportunities as do other students.

Rationale

The InJAC Children and Youth Workgroup chose to focus on goals and objectives related to schools and early care settings, given the important role that these facilities play in addressing the overall asthma burden for children, youth, and their caregivers. Strategies were developed for:

- Schools, which are defined as Indiana public and private schools accredited by the Department of Education.(IC 20-8.1-1-1)
- Regulated early care settings, which are defined as licensed child care centers or homes and registered ministries from the Indiana Family and Social Services Administration; Headstart and Earlystart Programs and regulated and/or Indiana Association for Education of Young Children (IAEYC) accredited preschools.

Key factors in managing asthma in schools and early care settings include: identification of children with the disease; communication with parents, and health-care providers; focused asthma education; removal of triggers in the immediate school environment; and maximization of access to medication when needed. The benefits to students of such an approach include better attendance, improved alertness and physical stamina, fewer symptoms, and fewer restrictions on participation in physical activities.(27, 32) The goal of the Children and Youth Workgroup is for all children with asthma to live a fully active life with minimal symptoms. Children and youth workgroup goals, objectives, and strategies were established to address the following issues:

Asthma Education and Awareness

School staff and students are often not aware of the magnitude of the asthma burden and what is required to successfully manage asthma within the learning environment. Education is needed

regarding effective use of individualized health plans for children with asthma, asthma triggers in the school that need to be controlled, ways to decrease exposure to allergens and irritants, and the implementation of appropriate asthma management policies. There is a need for more education and awareness activities to occur with students and school staff including teachers, nurses, administrators, school board members, school business officials, maintenance employees, custodians, and support staff. Children and Youth Workgroup strategies will help to maximize the capacity of schools to function as a vehicle for public education about asthma, both to find undiagnosed cases and to inform personnel of their role in helping children with asthma succeed in school.

Strengthening Management & Support Systems

Schools and early care settings also require focused assistance and tools to identify existing asthma needs and resources and to implement model programs to minimize asthma aggravations and enhance the health and learning ability of students with asthma. Children and Youth Workgroup strategies are designed to help schools and early care settings implement a coordinated and comprehensive asthma management program. Such a program includes developing and implementing policies and procedures, surveillance and evaluation, emergency plans for handling severe asthma attacks, and individualized health plans. A comprehensive asthma management program also includes coordination of student care with school nurses, self-management education tailored to the school environment, evaluation of children's ability to participate in physical education, as well as support for them to do so, health promotion, and implementation of "best practice" educational and environmental models.

Safe and Healthy Environment

Children generally spend six to nine hours per day in schools or early care settings making it important to reduce their exposure to environmental asthma triggers as much as possible in these environments. School building factors, such as the presence of dampness and adequacy of ventilation, affect the school environment. Proper design of new schools and school renovations help to ensure good ventilation and prevent accumulation of water which results in conditions unfavorable to asthma triggers. However, many schools lack the resources or training to properly attend to and/or remediate the indoor environment. Many of the factors that contribute to asthma in early care settings are the same as those in schools, however these facilities also pose a different set of challenges, including financial conditions that are often marginal, high staff turnover, a wide range of types and sizes of facilities, and lower levels of public involvement and oversight.(26) Children and Youth Workgroup strategies to address these issues include, providing schools and early care settings with tools and technical assistance to maintain good indoor air quality in the school and to reduce allergens and irritants, using integrated pest management techniques, and encouraging collaboration among health, environmental, and education sectors to support a common vision regarding healthy learning environments.

School Nurse Coordination

The Children and Youth Workgroup recognizes the integral role that school nurses can play in the management of children with asthma. School nurses serve as a liaison between the school and child's home and between the school and health care provider to promote adherence with the child's asthma plan of care.(33) The school nurse may develop and implement, in coordination with local

health care providers, the child's Individualized Health Plan; establish and monitor compliance with school policy related to the management of children with asthma; develop protocols for the care of children with asthma; provide or supervise proper medication administration; support education of the child in asthma self-management; monitor the child's condition; advocate for the child's inclusion in school-related activities; and work with school staff to help assure that accommodations are in place for the child's well-being. (28, 33, 34) School nurses are also in a prime position to identify and refer children who are not yet diagnosed with asthma. Tools and technical assistance are recommended in the Children and Youth Workgroup strategies to assist school nurses as they help to coordinate effective asthma management in the school setting.

Coordination Among School, Family, and Community Efforts

Effective management of asthma in school and early care settings requires a multidisciplinary approach between education, health and environmental agencies, and other community partners, to bring together broad expertise for developing strategic, creative approaches, and creating a culture of collaboration.(26, 35) Children and Youth Workgroup strategies focus on the building of community partnerships to promote communication, sharing of resources and encouraging members of the community to work together to identify and address issues related to the management of asthma in schools and early care settings. Community partners for schools and early care centers include families, health care providers, businesses, school-based health centers, local coalitions, and environmental groups.

Goals, objectives, and strategies

The following goals and objectives include a number of strategies designed to reduce environmental hazards that contribute to the asthma burden in Indiana schools and regulated early care settings. These strategies are integrated throughout the goals and objectives to support coordination between environmental and education sectors in the development and implementation of comprehensive school based asthma management programs. The Children and Youth Workgroup will work closely with the Environmental Quality Workgroup in the implementation of these strategies. Specifically, the Children and Youth Workgroup will rely on the expertise of the Environmental Quality Workgroup to develop technical information for training materials, programmatic information and the design of any surveillance instruments. Please refer to the Environmental Quality Workgroup chapter for strategies related to the development of technical information as well as for regulatory issues related to schools and early care settings.

Goal 1 Increase awareness of the asthma burden among children and youth, their caregivers and their community-based education and regulated early care providers.
Lead Agencies: IDEM/ISDH/FSSA/DOE

Objective 1 By September 2008, 50% of Indiana schools and regulated early care settings will have an increased awareness of the asthma burden among children and youth.

- Strategies**
- 1 Determine the baseline knowledge of the asthma burden for Indiana schools and regulated early care settings, including environmental hazards for asthma and conduct periodic remeasurements.
 - 2 Develop an in-service on asthma basics, asthma management and emergency response for schools and early care settings to use as part of their professional development activities.
 - 3 Provide Indiana child-care licensing staff with training and information on asthma management, including environmental hazards.
 - 4 Work with appropriate partners to integrate asthma awareness, lung health education, and health consumer skills training into health education curricula for grades pre-K through 12.
 - 5 Host a series of available satellite broadcasts to raise awareness of asthma within schools and regulated early care settings, including data on asthma prevalence and benefits of proper asthma management.

Objective 2 By September 2008, 40% of all Indiana schools and regulated early care settings will be able to identify health and environmental factors in their facilities that contribute to the asthma burden among children and youth.

- Strategies**
- 1 Provide technical assistance and training to schools regarding environmental concerns through the Enviro-Schools Program.

- 2** Utilize the Healthy Child Care Indiana Consultant program to disseminate information to regulated early care settings regarding asthma awareness, management and improvement of indoor air quality.
- 3** Provide technical support to professional associations and the Indiana Education Service Centers to offer training on asthma, successful school management strategies, indoor air quality issues, and other asthma triggers.
- 4** Develop a school nurse-training program that includes information about current asthma medications, successful asthma management, and patient self-management education.
- 5** Work with continuing education programs for professional school staff to include asthma management and reduction of asthma triggers as part of their curricula.
- 6** Provide an evaluation tool for schools and regulated early care facilities to encourage the assessment of asthma policies and programs, identify areas of improvement and implement an improvement plan in collaboration with staff, parents and students with asthma.

Goal 2 Improve school and regulated early care settings asthma management and support systems to reduce the asthma burden among children, youth and their caregivers.

Lead Agencies: ISDH/IDEM/FSSA/DOE/OSC

Objective 1 By September 2009, there will be a 75% increase in the number of Indiana schools and a 25 % increase in the number of regulated early care settings who will require individualized health care plans for asthma for the children with identified asthma.

- Strategies**
- 1** Require schools and regulated early care settings to develop Individualized Health Plans (IHP) for children with asthma that will include an asthma action plan from a health care provider containing information on asthma triggers, medications, recent peak flow readings if appropriate and emergency information.
 - 2** Encourage school corporations to utilize the school nurse as the coordinator of the health and well being of children with asthma in school settings. Recommend that school nurses provide the coordination with the child's family, health care provider and school staff in assisting the child with the appropriate self-management of their asthma, including receiving information about the asthma action plan.

- 3** Provide recommendations to regulated early care providers on evidence-based management of children with asthma and on appropriate staff to coordinate implementation of care with the family and health care provider.

Objective 2 By September 2009, there will be a 10% increase in Indiana schools and regulated early care settings that implement policies and practices that meet or exceed best practices for asthma management and are coordinated to support the educational, physical, emotional and social well-being of children.

- Strategies**
- 1** Provide schools and early care providers with implementation tools (e.g. model policies and procedures) related to the management of asthma.
 - 2** Work with schools and regulated early care settings to use integrated pest management strategies and the Indiana Pesticide Review Board's voluntary pesticide policy.
 - 3** Encourage the State School Bus Safety Committee to endorse voluntary no-idle programs, low-sulfur fuels options, and retrofitting devices. Also, encourage implementation of a policy that new school buses (school-owned or leased, or contracted) contain the most recent technology to reduce diesel emissions.
 - 4** Work with schools and regulated early care settings to implement standard emergency protocols for students in respiratory distress if they do not have their own individual asthma action plan.
 - 5** Work with schools and regulated early care settings to help assure that air quality policies are in place to address prevention, identification and resolution of potential problems from mold, moisture, animals, insects, cockroaches, improperly maintained ventilation systems and chemical pollutants.
 - 6** Work with physical education personnel, coaching staff and the Indiana High School Athletic Association to incorporate standard asthma management principles in physical education classes and extracurricular activities for students with asthma.
 - 7** Encourage Indiana Licensing Consultants to conduct routine environmental health inspections in regulated early care settings.
 - 8** Encourage schools and regulated early care settings to designate an Environmental Quality Coordinator to manage environmental health and safety policies, track complaints, and coordinate staff issues.

Objective 3 By September 2009, there will be a 25% increase in the number of Indiana schools and regulated early care settings that will implement evidence-based health promotion and education programs designed to reduce the asthma burden among children and youth.

- Strategies**
- 1** Develop and disseminate essential elements of a model asthma management program for schools and regulated early care settings to implement in collaboration with their school nurses, children's health consultant, relevant staff members, parents and children with asthma. Identify resources to assist schools in implementing the program.
 - 2** Disseminate principles of the EPA "Tools for Schools" program, the EPA Design for Schools and the asthma web-based tool developed by IDEM to improve school health environments for children.
 - 3** Assemble lessons learned and best practices from schools implementing the EPA "Tools for Schools" or modified "Tools for Schools" into a manual or web page and identify peer mentors for schools to assist them in initiating interventions to address indoor air quality.
 - 4** Work with Environmental Quality Workgroup to develop and disseminate a tool using principles from IDEM's 5 Star Environmental Recognition Program for Child Care Facilities and the Early Childhood Assessment Program to encourage the improvement of indoor environments for children. Encourage more facilities to participate in 5 Star Environmental Recognition Program.
 - 5** Assist schools in utilizing and implementing "best-practice" educational models developed by national organizations to help students in managing their own disease. Educational models may include, Open Airways and Star Bright Foundation's School Asthma Program (Quest for the Code), A is for Asthma (available in Spanish) and Air Power.

Objective 4 By September 2008, support the development of support networks and community partnerships to provide resources and assistance to reduce the asthma burden in Indiana schools and regulated early care settings.

- Strategies**
- 1** Facilitate community planning to identify potential support networks for schools and resources to include private sector, health care providers and organizations, not-for-profit, educational, faith-based, and philanthropic organizations.

- 2** Develop partnerships between school nurses/early care personnel and health care systems through virtual linkage (telehealth), community outreach, community-based care centers, telephone consultation, and other methods available in the community.
- 3** Identify and disseminate information on varied funding sources (private sector, non-profit and community organization) for schools to provide needed ancillary asthma care supplies (e.g. peak flow meters) to students.
- 4** Work with school districts to identify potential funding sources to implement indoor air quality and environmental improvements including replacement and retrofitting of school bus diesel engines.
- 5** Expand asthma management and indoor air quality education to the Indiana Immunization Campaigns, Early and Head Start Programs, Healthy Families, Child Care Health Consultant Program.
- 6** Collaborate with the Environmental Protection Agency (EPA) and Indiana's Tobacco Prevention and Cessation Program to promote and sustain smoke-free environments in schools and regulated early care facilities.



Background

In developing goals to reduce the asthma burden in Indiana, the Environmental Quality Workgroup sought first to identify environmental hazards and work-related risk factors that contribute to asthma and then to tailor remedies to specific settings, such as homes (including rental properties), commercial buildings, early care settings, schools, and the workplace. The Workgroup's focus included strategies to address those Hoosiers at greater risk for asthma.

Environmental hazards are defined as substances (chemical or biological agents) or conditions that can exacerbate asthma. The Workgroup's approach to identifying environmental and work-related hazards was to rely on authoritative sources—such as the National Asthma Education and Prevention Program (NAEPP), the Institute of Medicine (IOM), U.S. Surgeon General, U.S. Environmental Protection Agency (EPA), and U.S. Occupational Safety and Health Administration (OSHA)—augmented with more recent research findings.

The IOM, has determined that there are exposures associated with both the development of asthma and the precipitation or causation of an acute exacerbation of asthma.^(9,10) Although the task of preventing the development of asthma is a universal need, it is beyond the purpose and capabilities of *A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)* at this time. Factors determined by IOM that may be associated with the “development” of asthma in preschool aged children include exposure to the following:

- House dust mites
- Environmental tobacco smoke (ETS), also

known as second-hand smoke

- Cockroaches
- Respiratory syncytial virus (RSV)

The IOM has also determined that exposure to the following may aggravate asthma in sensitized individuals:

- Allergens produced by cats, dogs, domestic birds, cockroaches, and house dust mites
- Environmental tobacco smoke
- Nitrogen oxides from gas appliances in poorly ventilated kitchens
- Damp indoor environments, fungi or mold
- Formaldehyde and various fragrances
- Specific viruses such as rhinovirus

The NAEPP also determined that for successful long-term asthma management, it is essential to reduce or eliminate exposure to relevant allergens and irritants the person is sensitive to including, inhalant allergens (animal dander, house-dust mites, cockroaches, molds, pollens from trees, grasses, and weeds), occupational exposures, and irritants (tobacco smoke and indoor/outdoor pollutants and irritants such as wood smoke, unvented stoves or heaters, perfumes, cleaning agents, and sprays).⁽¹¹⁾

Further, in setting standards for outdoor air pollutants, the U.S. EPA determined that ozone, sulfur dioxide, nitrogen oxides, and fine particulate matter (less than 2.5 microns in diameter) are associated with asthma attacks. The EPA specifically identified fine particulate matter as a cause of hundreds of thousands of asthma attacks each year.⁽³⁶⁾ Particulate matter, also known as fine particulate matter, is primarily generated from burning, especially when it generates smoke.

Rationale

The Environmental Quality Workgroup's approach to reducing the asthma burden relies on basic public health principles of risk reduction and disease prevention.⁽³⁷⁾ To this end, the Environmental Quality Workgroup developed recommendations that:

- Identify Hoosiers who are at greatest risk in terms of environmental and work-related hazards for asthma
- Develop technical materials to be used to educate those people in a position to reduce exposure to environmental and work-related hazards that trigger asthma
- Evaluate and update regulations, standards, and programs to reflect new knowledge about environmental and work-related hazards for asthma
- Provide support, including technical information in the development and/or implementation of necessary regulations, standards and programs to benefit Hoosiers
- Create linkages and collaborations among key agencies and organizations throughout the state

The *Indiana Asthma Plan* emphasizes surveillance and education that is broad-based and includes as a focus the distribution of education materials, technical assistance, and promotion of an educational website for environmental hazards. A shortcoming of relying on education alone is that it does not address the basic lack of resources needed to reduce environmental hazards, such as mold-infested flooring and walls, heating of living spaces with open flames that produces oxides of nitrogen and fine particles, or intrusion of water into living spaces because of a lack of gutters and downspouts. The Environmental Quality Workgroup recommendations that are included in the *Indiana Asthma Plan* provide an important starting point for reducing the asthma burden related to environmental and work-related hazards, but achieving substantial

reductions will require Indiana to take the following additional actions:

- Build local health department capacity to identify and reduce environmental and work-related hazards for asthma
- Create and enforce, where appropriate, programs to reduce dampness, mold, cockroaches, dust mites and other hazards in homes, schools, child care facilities, commercial buildings, offices, and at workplaces
- Develop strategies to provide at-risk populations with the tools they need to seek remedies for environmental and work-related hazards for asthma
- Protect people, especially preschool-aged children, from environmental tobacco smoke
- Develop and implement an effective strategy to limit uncontrolled burning of waste that creates smoke and other respiratory irritants
- Implement the federal and state air pollution regulations, especially the regulations designed to reduce fine particulate matter and ozone
- Pursue strategies to reduce asthma and integrate these whenever possible, into other programs, to take full advantage of the fact that environmental and work-related hazards for asthma overlap with other environmental health issues, especially respiratory disease

By characterizing baselines and promoting education, Indiana will be able to develop performance indicators and contribute to the knowledge base on environmental and work-related hazards related to the asthma burden. As time, resources, and agency priorities allow, ISDH and IDEM can build on these initial efforts.

The Environmental Quality Workgroup goals, objectives and strategies were established to address the following:

Environmental hazards in homes and commercial buildings

In many instances, even those afflicted with asthma do not realize the hazards that exist within the facilities in which they live, work, and visit. To deliver these messages effectively to homeowners, renters, landlords, school and workplace officials, Indiana must first determine the extent of knowledge about asthma hazards within these groups. Once these baseline data are determined, groups can be identified and targeted for education.

The Workgroup's recommendations include strategies to identify those at greatest risk in homes and other buildings, develop technical materials to be used in education programs, and strengthen the ability of state and local governments to help citizens identify and reduce environmental hazards for asthma. Target audiences will be reached as the Workgroup joins with its partners to include educational information in their routine discussions with their members and by focusing on this topic at various annual conferences. Web-based, print, and other media will be used to deliver educational messages.

Environmental hazards in schools and regulated early care settings

Asthma is among the leading causes of absenteeism from school. Children who must contend with physical illness find it difficult to learn effectively. Based on these two factors alone, it is clear that schools and early care settings are places where environmental hazards for asthma should be reduced. To accomplish this, it is recommended that the Indiana Sanitary Schoolhouse Rule be reviewed and updated to include consideration of environmental hazards in the location, construction, management, renovation, and repair of school facilities. The Environmental Quality Workgroup also plans to develop technical and educational information for parents and employees of schools and early care

settings to provide them with the information necessary to affect positive change in their homes and facilities. Web-based, print, and other media will be used to deliver educational messages.

Supplying health care providers with information to evaluate environmental and work-related hazards

Medical providers and other health care professionals are a critical source of health care education for patients who seek to control their asthma. Therefore, it is important for these professionals to understand how to identify environmental and work-related hazards that impact their patients with asthma and direct actions to reduce risks. The Environmental Quality Workgroup's strategies to support health care providers includes evaluating the technical content of existing educational materials and developing model technical materials to be used in education programs.

Environmental hazards in outdoor air

Exposure to pollutants in outdoor air can occur as people travel, engage in outdoor work or recreational activities, and even through the movement of outdoor pollutants indoors. The risk of health effects depends on the concentration of pollutants, the chemical nature of the pollutants, and how long the exposure lasts. There is a large variation in sensitivity to pollutants among the general population; in general, infants and children, pregnant women, the elderly, and those with pre-existing heart or lung conditions are considered to be at greater risk from health effects related to outdoor air pollution. Although research continues to evaluate the relationship between asthma and air pollution, there is a growing consensus that air pollution can contribute to the asthma burden.

Because the U.S. EPA has extensive regulatory programs for air pollution in general, the Environmental Quality Workgroup focused its attention on

environmental quality

outdoor air pollution issues judged to create special risks. These include ozone and fine particulate matter and other pollutants produced by combustion reactions from burning trash and leaves, the use of wood stoves, and operating diesel engines. The recommended strategies aim to identify those at greatest risk, develop technical materials to be used in education programs, evaluate need for regulatory change, and strengthen the ability of state and local governments to help citizens identify and reduce environmental hazards for persons with asthma.

Environmental hazards in Indiana's indoor and outdoor workplaces

Anyone who works—in an office, factory, or other indoor service setting or in the outdoor environ-

ment—is potentially exposed to environmental hazards and over 180 chemical and biological agents that are associated with work-related asthma.(38). Strategies to reduce hazards that contribute to asthma in the workplace aim to improve surveillance, identify those at greatest risk, develop and distribute technical materials to be used in education programs, and collaborate with other partners to reduce exposure to environmental tobacco smoke. Web-based, print, and other media will also be used to deliver educational messages. InJAC recognizes the potential of certain construction and agricultural activities that may trigger an asthma attack but strategies to address these activities will likely be included in future work based on findings of the asthma burden data.

Goals, objectives, and strategies

Goal 1 Reduce environmental hazards that contribute to asthma in Indiana homes, rental properties and commercial buildings.

Lead Agency: IDEM

Objective 1 By January 2006, develop tools to increase public knowledge about environmental hazards for asthma and reduce these hazards in the buildings in which Indiana residents live, work, and visit.

- Strategies**
- 1** Gather and analyze baseline data to identify the knowledge that Indiana homeowners, renters and landlords, and commercial building owners, operators, and workers have about environmental hazards for asthma and ways to reduce those hazards.
 - 2** Develop technical materials for a web-based outreach tool, print, and other media as appropriate for environmental hazards for asthma in homes, rental properties, and commercial buildings. These materials will include lists of environmental hazards, explanations of their significance, and ways to reduce these hazards.
 - 3** Develop checklists to be included in outreach materials including:
 - Checklist identifying environmental hazards and ways to reduce hazards in homes and commercial buildings
 - Checklist identifying environmental hazards for asthma when purchasing homes and commercial buildings
 - Checklist for hiring a builder or contractor to ensure that he/she has the knowledge and skill to work to reduce environmental hazards during construction or renovation
 - 4** Identify vulnerable populations (e.g., low income, homeless, migrant workers and other at risk populations) and determine the extent to which environmental hazards contribute to asthma in these groups.
 - 5** Work with statewide partners to include information on housing issues related to environmental hazards for asthma (focusing on low-income housing) at regional or statewide conference(s). Partners may include social service agencies, Indiana Housing Finance Authority (IHFA), local health departments, Housing and Urban Development (HUD), and Community Action Programs (CAPS).
 - 6** Develop materials for an educational outreach tool describing housing rights for people with asthma under the Fair Housing Act and other civil rights laws to be made available to tenants, health care providers and professionals, school nurses, Head Start and Early Start staff, and family and social services agencies.

- 7** Develop an information tool for apartment associations on environmental hazards for asthma and ways to reduce triggers. Work with apartment associations to incorporate information in training programs.
- 8** Develop technical information for public service announcements on environmental asthma hazards in housing and commercial units for television, print, or other media.
- 9** Incorporate and disseminate technical information for outreach materials to educate housing and commercial building occupants (including parents and children) about the consequences of exposure to Environmental Tobacco Smoke (ETS).
- 10** Educate health professionals and the public (particularly vulnerable populations) about environmental hazards for asthma related to the use of unvented heaters (such as kerosene heaters, gas heaters, and gas cooking stoves) as a primary source of heating.
- 11** Develop and disseminate information regarding ways to reduce smoke emissions from wood burning stoves, including reduction through up-grading of efficiency performance standards for emissions.
- 12** Educate the public regarding housing weatherization efforts (e.g. reducing moisture in homes) related to environmental hazards for asthma.
- 13** Develop materials describing allergens for people with asthma to be made available to tenants, health care providers and professionals, school nurses, Head Start and Early Start staff, and family and social services agencies.

Objective 2 By January 2007, develop tools and technical information for Indiana commercial property owners and building-related professionals to identify and reduce environmental hazards that contribute to asthma.

- Strategies**
- 1** Develop survey questions and baseline data for awareness among key stakeholders including commercial building owners, operators, workers, landlords and other building-related professionals about environmental hazards for asthma and construction and renovation techniques to reduce environmental hazards for asthma in homes, rental properties, and commercial buildings.
 - 2** Develop technical information for an outreach tool for building-related professionals to increase awareness about environmental hazards for asthma and ways to reduce these hazards.
 - 3** Work with the building-related professionals associations and renters and landlords' professional associations to create links to the IDEM website and to distribute these resources to these memberships.

- 4** Work with HUD staff and organizations concerned with housing (such as the Indiana Chapter of the National Association of Housing and Redevelopment Officials) to develop education for housing authority staff on environmental hazards for asthma and ways to reduce environmental hazards.
- 5** Develop and disseminate educational material about environmental hazards for asthma in rental and low-income housing.
- 6** Review current licensing requirements for building-related professionals and propose changes as necessary to include demonstrated knowledge about environmental hazards for asthma and ways to reduce these hazards.

Objective 3 By January 2009, increase by 20% state and local government capacity to identify environmental hazards for asthma and ways to reduce these factors in Indiana homes, rental properties and commercial buildings.

- Strategies**
- 1** Gather and analyze baseline data on state and local capacity to identify environmental hazards for asthma and ways to reduce these hazards in homes, rental properties and commercial buildings.
 - 2** Develop technical information for a web-based outreach tool for environmental health professional staff to gain asthma-environment expertise as part of local/regional health department services.
 - 3** Train local health department, health, building code staff, and construction plan reviewers on environmental hazards for asthma and ways to reduce environmental hazards.

Goal 2 Reduce environmental hazards that contribute to the asthma burden in Indiana schools and regulated early care settings.

Lead Agencies: IDEM, ISDH

In addition to the following Environmental Quality Workgroup goals, objectives and strategies related to schools and regulated early care settings, please refer to the previous chapter. Children and Youth, for additional strategies designed to reduce environmental hazards that contribute to the asthma burden in Indiana in these settings. The Children and Youth and Environmental Quality Workgroup will collaborate in the implementation of strategies related to schools and regulated early care settings. Specifically, the Children and Youth Workgroup will rely on the expertise of the Environmental Quality Workgroup to develop technical information for training materials, programmatic information and the design of any surveillance instruments. The Children and Youth Workgroup will be responsible for disseminating education materials and providing technical assistance to schools and regulated early care settings as they seek to develop and implement comprehensive school based asthma management programs.

Objective 1 By June 2006, propose revisions to the Indiana Sanitary Schoolhouse Rule (Schoolhouse Rule) to address environmental hazards for asthma in the location, construction, management, or renovation and repair of school buildings or facilities.

- Strategies**
- 1** Review the ANSI/ASHRAE [American National Standards Institute/American Society of Heating Refrigeration and Air-Conditioning Engine] standard 62-2001 Ventilation for Acceptable Indoor Air Quality (IAQ) and the EPA's IAQ Design Tools for Schools to identify strategies for reducing environmental hazards for asthma.
 - 2** Review the requirements for certification and licensing of pesticide applicators and registered technicians for residential and institutional pest control to evaluate adequacy of training and testing as it relates to reducing environmental hazards for asthma.
 - 3** Develop guidance for "model" asthma sections for the Schoolhouse Rule based on the review of the ANSI/ASHRAE ventilation standard 62-2001, the EPA's Design Tools for Schools, and pesticide applicator/technician certification and licensing requirements.
 - 4** Disseminate the revised Schoolhouse Rule to affected audiences (beyond usual mechanisms for Rule publishing and distribution).
 - 5** Develop the technical materials for training superintendents and school administrators on the revised Schoolhouse Rule. Provide regional training to superintendents through the Indiana Education Service Centers (IESC) on the Schoolhouse Rule.
 - 6** Involve stakeholders in education about the Schoolhouse Rule through the web-based outreach tool and informational meetings. Stakeholders include but are not limited to, the Indiana Department of Education (IDOE); associations for superintendents, teachers, school boards, and architects; consultants; school nurses and health care providers, and local health departments.

Objective 2 By January 2009, recommend revisions to voluntary and regulatory codes that affect schools and regulated early care settings to address environmental hazards for asthma in these settings.

- Strategies**
- 1** Identify voluntary and regulatory codes that affect schools/early care settings and which address or could address environmental hazards for asthma. Review these codes to evaluate the need for revisions that include ways to reduce environmental hazards.
 - 2** Integrate ways to reduce environmental hazards for asthma into the Indiana Guaranteed Energy Savings Contracts and Energy Efficiency Program (IC 36-1-12.5).

- 3** Incorporate information regarding environmental hazards for asthma and reduction strategies into school and regulated early care facility pest control.
- 4** Review licensing rules for regulated early care settings and identify gaps that need to be filled to reduce environmental hazards for asthma in the location, construction, management, or renovation and repair of the facilities. Work with stakeholders to identify appropriate ways to reduce environmental hazards for asthma in these settings and recommend revisions of licensing rules.
- 5** Work with the IDOE to review the requirements for 511 IAC 6.1 School Accreditation to determine feasibility of adding ways to address/reduce environmental hazards for asthma to accreditation process.

Objective 3 By January 2006, develop technical information and tools to assist Indiana parents, schools and early care settings in identifying and reducing environmental hazards for asthma in schools and early care facilities.

- Strategies**
- 1** Develop the technical information for a web-based outreach tool to provide information on environmental hazards for asthma and ways to reduce these hazards for early care facility and school-related stakeholders including, but not limited to, teachers, parents, nurses, maintenance personnel, contractors, and administrators.
 - 2** Develop the technical information for public service announcements to educate parents about environmental hazards for asthma in early care settings.
 - 3** Work with Children and Youth workgroup to develop and disseminate a checklist that parents can use to evaluate early care settings for the adequacy of its asthma awareness and environmental hazard reduction program.
 - 4** Provide technical assistance to Children and Youth workgroup in the development of training materials, programmatic information and any surveillance instruments related to environmental hazards for asthma.
 - 5** Provide model contract language for schools that contract out remediation/renovation work.
 - 6** Develop a model caravanning, anti-idle and maintenance policy for school buses.

Objective 4 By January 2009, increase by 20% state and local government capacity to identify and reduce environmental hazards for asthma in schools and regulated early care settings.

- Strategies**
- 1** Develop baseline data on state and local capacity to identify and reduce environmental hazards for asthma in schools and regulated early care settings.
 - 2** Develop a training program for local health departments and building code staff to help them identify and reduce environmental hazards for asthma in schools and early care settings.

Goal 3 Indiana health care providers will have the information to evaluate environmental and work-related hazards that impact their patients with asthma and direct actions for reducing risk.
Lead Agencies: ISDH, IDEM

Objective 1 By 2007, develop the technical information for model tools that Indiana health care providers can use to educate their asthma patients.

- Strategies**
- 1** Develop technical information regarding environmental and work-related hazards for asthma, including environmental tobacco smoke and provide assistance to the Health Care Provider Workgroup in developing and evaluating education/training activities and curricula for health care providers.
 - 2** Work with the Health Care Provider workgroup to disseminate information to health care providers about environmental and work-related hazards for asthma through development of links between professional organizations and the IDEM website.

Goal 4 Reduce environmental hazards that contribute to the asthma burden in Indiana's outdoor air.
Lead Agency: IDEM

Objective 1 By 2010, or in advance of federal deadlines, attain ozone and fine particulate matter health standards in 24 counties designated in whole or part as non-attainment areas in 2004.

- Strategies**
- 1** By 2007, for non-attainment areas, develop clean air plans, including adoption of necessary control measures.
 - 2** Identify or develop and disseminate guidelines and regulations to the counties regarding the control and remediation of environmental hazards for asthma in outdoor environments.

- 3** Identify geographical areas in the state that are at elevated risk for asthma (e.g. due to industry emissions, etc.).

Objective 2 By January 2006, develop tools to increase the knowledge of Indiana residents about outdoor environmental hazards that contribute to asthma and about ways to reduce hazards in the outdoor air.

- Strategies**
- 1** Develop survey questions and baseline data to identify the knowledge that Indiana residents have about outdoor environmental hazards for asthma and ways to reduce these hazards.
 - 2** Develop technical material for outreach tool(s) for outdoor environmental hazards for asthma that includes lists of hazards, explanations of their significance, and ways to reduce hazards.
 - 3** Develop technical materials for outreach tool(s) to educate the public and policymakers on safe pesticide management practices to minimize unnecessary exposure for persons suffering with asthma.

Objective 3 By January 2009, reduce emissions from the outdoor burning.

- Strategies**
- 1** Identify communities with a high number of children with asthma in order to prioritize these communities for restricting or eliminating open burning.
 - 2** Maintain baseline data for local ordinances that address outdoor burning.
 - 3** Promote the adoption and enforcement of a local model burn ban ordinance through an IDEM web-based outreach tool and other means as appropriate.
 - 4** Support local health departments and Solid Waste Management Districts in developing/enhancing enforcement programs for eliminating burning.
 - 5** Work with the American Lung Association (ALA), the Indiana Associations of Cities and Towns, local fire and health departments, and other partners to promote open burning bans statewide.
 - 6** Develop technical materials to educate the public on the adverse health impacts of outside burning, including smoke and ash from wood burning.
 - 7** Promote alternative leaf disposal methods such as curbside leaf vacuum service for communities that continue to allow outdoor leaf burning.

Goal 5 Reduce environmental and work-related hazards that contribute to the asthma burden in Indiana's indoor and outdoor workplaces.

Lead Agency: IDEM

Objective 1 By 2008, identify environmental and work-related hazards and conduct ongoing surveillance monitoring for workplace asthma in Indiana.

- Strategies**
- 1** Work with IOSHA to develop a report on workplace asthma in Indiana. The report should include, but is not limited to the following elements:
 - A list of workplaces, occupations (including agriculture) and hazards with high, medium, and low-risk for workplace asthma based on materials used and/or products produced
 - A list of hazards that can cause or exacerbate asthma
 - The extent to which at-risk workplaces are exempt from key IOSHA requirements because of size or other exemptions
 - Surveillance based initially on OSHA's Log of Work-Related Injuries and Illnesses
 - Estimates of the costs of asthma among workers
 - 2** Evaluate the adequacy of the annual reporting of occupational illnesses to track workplace asthma. Identify new surveys, including monitoring data, as needed to ascertain the state of asthma among Indiana workers in at-risk industries or occupations.
 - 3** Identify potentially underserved populations, such as migrant workers, with workplace asthma. Develop strategies, as needed, to reduce the exposure of these groups to environmental and work-related hazards for asthma.
 - 4** Work with occupational physicians and clinics to estimate work-aggravated asthma versus new onset cases of occupational asthma.

Objective 2 By 2009, develop technical information for increasing the knowledge of Indiana workplaces about hazards for workplace asthma and for implementing best practices to reduce the workplace asthma burden.

- Strategies**
- 1** Survey at-risk workplaces and workers for their knowledge of specific hazards and hazard reduction measures for workplace asthma specific to their industries.
 - 2** Develop the technical content for a web-based outreach tool and other media as applicable to address environmental hazards for workplace asthma, ways to reduce and prevent asthma environmental

hazards, and resources for affected workers, including a resource list with information about current health care and disability insurance programs for workplace asthma.

- 3** Review medical provider case studies for work-related environmental hazards for asthma and publish on the web-based outreach tool to help providers anticipate, recognize, evaluate, and control workplace asthma.
- 4** Work with unions, trade and professional organizations, local public health departments, and other stakeholders to create links to the web-based outreach tool.
- 5** Identify “best practices” locally, statewide, and nationally that address workplace asthma and reduce workplace exacerbations of asthma (e.g. California SENSOR asthma program).
- 6** Develop the technical materials for training programs to address environmental hazards for work-related asthma and to educate workplace management on best practices, asthma triggers, and control mechanisms, as well as identification of symptoms that require referral for diagnosis.
- 7** Develop technical information for public service announcements on environmental hazards for workplace asthma for television, print, or other media.
- 8** Make information available (via the IDEM website and other media as appropriate) about accommodations and resources available to workers who may need job retraining to avoid environmental hazards for workplace asthma.
- 9** Work in collaboration with the Indiana Tobacco and Prevention and Cessation Agency to reduce smoking and exposure to environmental tobacco smoke.
- 10** Pending resource availability, work with IOSHA and local health departments to provide increased consultative services to workplaces to identify and address workplace asthma.



Background

Patients with asthma can experience varying symptoms and severity due to the nature of the disease. They require regular follow-up visits with their health care provider to monitor their symptoms, adjust therapy as needed, and review their management plan. The impact of asthma and its treatment on persons with asthma, and on the health care systems and the local community, is documented in several Indiana studies. A community health assessment conducted in Indiana's largest county found asthma to be the number one cause of potentially avoidable hospitalization.⁽³⁹⁾ This study also found asthma to be a leading cause of hospitalization in the 0–18 year age range.

The successful management of any disease state must include the essential component of adherence to the therapeutic program. Although safe and effective medical therapy for asthma exists, asthma continues to be a major cause of morbidity for children.⁽⁴⁰⁾ One of the key areas of investigation in a study of Indiana inner-city children with asthma was adherence to an asthma management plan by patients and families. Within the Indianapolis Public Schools, a screening was done in twelve middle schools with 53% of the identified asthma group meeting criteria for moderate or severe persistent asthma. Within that targeted population, only 18% admitted to using their prescribed anti-inflammatory agent regularly.⁽⁴¹⁾

Despite the availability since 1991 of national consensus guidelines for the identification and treatment of asthma, asthma management in Indiana and nationally has not shown consis-

tent improvement. Additionally, the diagnosis of asthma is sometimes delayed for various reasons or the disease is misdiagnosed as another condition. Hospitalizations for asthma are usually avoidable or preventable when patients receive appropriate care.⁽⁴²⁾ Studies to support implementation of national asthma guidelines have shown that less than half of admitted patients are receiving anti-inflammatory therapy as recommended in previous national guidelines.⁽⁴³⁾ Only a minority of patients hospitalized in urban hospitals had a written asthma action plan in place, again despite national and expert recommendations.⁽⁴⁴⁾

Indiana offers a state medical school and other health care professional education programs throughout the state and therefore has the opportunity to influence the education and practicing patterns of those students, a significant number who will remain in Indiana. Indiana University School of Medicine (IUSM) educates the second largest medical student body in the U.S. Approximately two-thirds of Indiana's physicians received all or some of their education at IU. Approximately 52 percent of IUSM graduates enter primary care specialties.⁽⁴⁵⁾

Indiana health care professionals deliver care in a range of practice settings and environments. The need for an ongoing source of health care – ideally a medical home – for all children has been identified as a priority for child health policy reform at the national and local level ⁽¹²⁾. The American Academy of Pediatrics, in defining a medical home initially in 1992, believes that the medical

care of infants, children, and adolescents ideally should be accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective. The Future of Family Medicine project report released March 55, 2004, agrees that patients need a personal medical home that serves as the focal point through which all individuals regardless of age, sex, race, or socioeconomic status receive acute chronic and preventive medical care services.(46, 47)

In contrast to care provided in a medical home, care provided through emergency departments, walk-in clinics and other urgent-care facilities, though sometimes necessary, is more costly and often less effective for chronic conditions. A national study of 965 children who had acute asthma and presented to 48 emergency departments in large urban areas found a significantly lower likelihood of having a primary care provider for Medicaid children or uninsured children, compared with those who are enrolled in managed care or had other insurance. Poorer outcome was found between the former two groups of children, even after controlling for age, race/ethnicity, parents' education level, median household income, previous hospitalizations for asthma, and previous intubations for asthma.(48)

Findings from the National Medical Home Learning Collaborative are showing that implementation of the care model for child health in a medical home results in improved quality standards of care outcomes, resource information and referral, identification of the population, care coordination, and office environment. While the medical home movement has grown out of the pediatric community and children with special needs, it embodies all of the aspects of quality primary care being promoted for adults with chronic conditions.(49)

Rationale

In developing health care provider objectives for *A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)*, the Health Care Provider Workgroup determined the need to focus on asthma management by practicing providers, training of future health care providers and meeting patient needs most effectively in a medical home. In order to provide the most appropriate care for persons with asthma, the workgroup selected strategies to address the following:

Best Practice Guidelines

People with asthma living in Indiana will benefit from health care providers using evidence-based best practice guidelines to aid in the diagnosis, severity classification, and management of their asthma. The National Heart, Lung, and Blood Institute (NHLBI) Guidelines for the Diagnosis and Management of Asthma serve as a good foundation from which to proceed.(11) The Indiana Joint Asthma Coalition (InJAC) Steering Committee adopted the NHLBI Guidelines to be utilized as the basis for identification of asthma and clinical management of persons with asthma. The Indiana State Department of Health, in partnership with the Indiana Office of Medicaid Policy and Planning, has developed a Chronic Disease Management Program (ICDMP) that includes approximately 18,000 children in Indiana with asthma. Members from the InJAC Health Care Provider Workgroup have been actively involved in the ICDMP program development related to asthma clinical care of the person with asthma. As addressed in the strategies, the Health Care Provider Workgroup will utilize the ICDMP program materials in educating Indiana health care providers about best practice guidelines. The Health Care Provider Workgroup will also work in collaboration with the Environmental Quality Workgroup in developing information and recommendations regarding specific environmental controls to reduce exposures for those persons diagnosed with sensi-

tivity to inhalant allergens (presence of specific IgE antibodies).

Studies have shown that such education efforts can be successful in gaining adherence to guidelines and improving care (50,51,52). To advance the successful implementation of asthma best practice guidelines by health care providers, it will require joining forces with various Indiana health care provider professional associations and organizations to support the distribution and implementation of the NHLBI guidelines and ICDMP materials. In fact, studies have shown that educational efforts for implementing practice guidelines developed within local organizations were the most effective.(50)

Patient Education and Asthma Action Plans

One of the essential components of asthma management is education.(11) There is evidence that asthma education can reduce hospitalizations and emergency department visits.(53,54) Patients and their families or caregivers need specific knowledge regarding asthma symptoms and their treatment and effective asthma self-management skills. Although evidence is still evolving regarding the impact of written asthma action plans on patient outcomes, it is seen by the NAEPP Expert Panel as an important part of the overall effort to educate patients in self-management. Asthma action plans are considered to be an effective communication tool between the person with asthma and his/her health care provider in helping increase awareness of the disease state and control measures.(11). As part of the overall management of Indiana patients with asthma, a key element will be the development of a written management plan as part of educating patients regarding self-management (11).

Health Benefit Coverage and Reimbursement

Administrative issues with health payers as well as inadequate reimbursement for comprehensive medical home services create barriers to the successful transformation from the traditional fragmented,

multi-entry health care delivery system currently being accessed by persons with asthma.(46, 47) Services recommended by consensus best practice guidelines should be appropriately reimbursed by third-party payers. To improve health care delivery and financing, actions need to be taken to increase access to asthma care services by expanding insurance coverage, improving benefit design, and education of health care purchasers (6). Development of a model asthma benefit, and reimbursement plan that supports the best practice guidelines, medical home and chronic care model frameworks, and subsequent acceptance of the model by health payers, will help to promote and sustain the delivery of these comprehensive health care services to people with asthma living in Indiana.

Health Care Provider Education

Indiana health care providers should be prepared and well educated regarding the asthma disease state. In addition to continuing education programs that offer ongoing educational opportunities for practicing health care providers, there is a need to ensure that future Indiana health care providers receive the necessary training to effectively manage asthma. A national study determined a strong predictor of retention was found when residents attended medical school and residency training in the same state.(55) Because the data for Indiana shows that about 50% of primary care physicians in Indiana were trained at IUSM, InJAC has the opportunity to provide direction to the education of future health care providers regarding asthma. The establishment of a multidisciplinary asthma teaching curriculum committee will identify the most effective teaching formats for incorporating the core asthma curriculum standards into Indiana health care provider training programs. Currently, there exist a myriad of rationales and inconsistencies in knowledge and adherence to evidence based asthma care (57, 58) Development of asthma core curriculum standards will facilitate the consistent

application of best practices by future Indiana health care providers caring for persons with asthma. The core curriculum for asthma is envisioned to be far reaching by touching all future health care providers, some of whom may not realize the full potential they have to impact this patient population, such as a school nurse or community pharmacist.

Medical Home Concept

Providing health care for persons with asthma by a primary patient care team or medical home will help patients achieve their maximum potential. A medical home, which consists of, at the least, a source of first-contact care, person-focused care over time, comprehensiveness of care, and coordination of care, provides more effective services as well as fewer disparities and more equity in health across population subgroups.(48) An organized health care delivery team has been shown to provide superior patient care outcomes in diabetes, congestive heart failure, asthma, and children with special health care needs.(48) Initially, a unified communications strategy will be developed to promote awareness and understanding of the medical home concept and its benefits as supported by practice-based research to Indiana health care

providers treating people with asthma (49). This communication strategy directed to Indiana health care providers treating people with asthma will be based on the same principles outlined for the successful education of providers regarding asthma best practice guidelines.

Chronic Condition Management (CCM) involves explicit changes in the roles of providers and office staff aimed at improving access to needed services, communication with specialists, schools, and other resources, and outcomes for children and families (48). ICDMP also supports using the chronic care model and incorporates the model concepts in the training materials. The education of Indiana health care providers will address the functional changes in office practices that are required to successfully implement the medical home, including advanced information technology allowing primary care physicians to access the patients' health information. Developing enhanced, integrated communication between the physician and other community health care providers will enable coordination of services while maintaining the objective for the person with asthma to receive primary care services through a consistent medical home.

Goals, objectives, and strategies

Goal 1: Indiana Health Care Providers will implement best practice guidelines for the diagnosis and management of asthma.

Lead Agency: ISDH

Objective 1 By 2007, increase by 10% the number of health care providers who use the National Heart, Lung, and Blood Institutes (NHLBI) preferred or NHLBI alternative therapy guidelines appropriate to the patient's asthma step category.

- Strategies**
- 1** Distribute the Indiana Chronic Disease Management Program (ICDMP) materials to Indiana primary care providers to facilitate utilization of evidenced based asthma care management practices.
 - 2** Obtain technical information from the Environmental Quality Workgroup related to environmental hazards and the reduction or elimination of relevant allergens to supplement the ICDMP materials.
 - 3** Collaborate with various Indiana health care provider professional associations and organizations to increase the use of the NHLBI guidelines and ICDMP materials (i.e., Medical, Pharmacy, Nursing, Respiratory Therapists, and other associations/societies, Indiana Chapters of the American Academy of Family Practice and American Academy of Pediatrics, IN Primary Health Care Association, IN Rural Health Association).
 - 4** Develop the methodology to obtain baseline information and ongoing monitoring of information on selected indicators of adherence to the NHLBI preferred and NHLBI alternative therapy guidelines.
 - 5** Analyze provider performance, as data becomes available, to identify and document rates of implementation and utilization of NHLBI preferred and NHLBI alternative therapies.
 - 6** Provide feedback on the implementation and measurement of NHLBI preferred and NHLBI alternative therapies, identify opportunities for improvement, and facilitate education through academic detailing.
 - 7** Evaluate the effectiveness of education, data analysis, and reporting interventions in increasing the number of health care providers who have patients following the NHLBI preferred or alternate therapies. Define and monitor additional indicators to assess effectiveness of interventions (i.e., HEDIS, Healthy People 2010.)

Objective 2 By 2007, increase by 10% the number of health care providers who provide asthma education and written asthma action plans for people with asthma.

- Strategies**
- 1** Establish a methodology to obtain baseline information on the percentage of patients:
 - With an asthma action plan
 - Who say they received education regarding asthma management
 - Who received information about environmental triggers
 - Who report adherence to their asthma action plan
 - 2** Provide feedback to health care providers on baseline information and identify areas of improvement. Focus continued education efforts on the importance of asthma action plans and asthma education.
 - 3** Identify and implement opportunities to promote the use of the ICDMP education materials and asthma action plans to support standardization of evidenced-based asthma management tools to improve asthma care.
 - 4** Identify credentialed asthma educators who can serve as resources for providers and their patients. Include a list of credentialed asthma educators in the asthma resource guide to be developed by the Public Education Workgroup and ICDMP materials.
 - 5** Provide technical assistance in reviewing educational materials provided through ICDMP to identify literacy levels and cultural issues such as language and health beliefs that may interfere with patient education.
 - 6** Evaluate the process through assessment (remeasurement) of patients who receive patient education and have an asthma action plan as an essential part of their asthma management from their health care provider.

Objective 3 By 2007, increase by 10% the number of health care providers who obtain an appropriate work-related and non-tobacco environmental patient history and direct appropriate action.

- Strategies**
- 1** Use the patient survey (developed in Objective 2) to obtain baseline information on current practices by health care providers in obtaining appropriate information and actions taken.
 - 2** Provide feedback to health care providers on baseline information followed-up by identifying effective practices, opportunities for improvement, targeted populations and key interventions.

- 3** Educate health care providers on obtaining appropriate work-related and non-tobacco environmental history using the environmental triggers section of the ICDMP provider asthma toolkit.
- 4** Receive technical information, best practices, and available referral resources from Environmental Quality Workgroup to supplement educational efforts for health care providers and asthma patients on methods to reduce exposures to precipitants of asthma symptoms.
- 5** Evaluate the effectiveness of the interventions through assessment (remeasurement) data analysis. Explore incorporating indicators into audit sample (Goal 3, Objective 2) to assess evidence of history and actions.

Objective 4 By 2007, increase by 10% the number of health care providers who obtain an appropriate patient environmental tobacco smoke (ETS) history and direct appropriate action.

- Strategies**
- 1** Utilize a patient survey (developed in Objective 2) to obtain baseline information on current practices by health care providers in obtaining ETS history and interventions.
 - 2** Provide feedback to health care providers on baseline information; identify effective practices, opportunities for improvement, targeted populations, and key interventions.
 - 3** Educate health care providers on appropriate ETS history taking and the importance of smoking cessation.
 - 4** Educate health care providers about effective smoking cessation strategies, available referral systems and program resources, smoking cessation interventions/programs reimbursed by health plans and/or employers, and exposure prevention strategies.
 - 5** Collaborate with the Environmental Quality and Public Education Workgroups to develop outreach efforts to improve public awareness of the impact of environmental tobacco smoke on persons with asthma.
 - 6** Evaluate the effectiveness of the interventions through assessment (remeasurement) data analysis. Explore incorporating indicators into audit sample (Goal 3, Objective 2) to assess evidence of history and actions.

Objective 5 By 2006, develop an initial asthma best practice course for health care providers offering CEU and CME.

- Strategies**
- 1** Survey providers and health care educational entities (institutions, clinical training programs, asthma advocacy groups, professional societies, etc.) regarding current asthma educational programs and their content.
 - 2** Formulate a committee of health care professionals with expertise in asthma care, educators, and representatives from the Indiana University School of Medicine to develop asthma best practice course content and course evaluation tools.
 - 3** Receive technical information, best practices, and available referral resources from Environmental Quality Workgroup regarding work-related and environmental hazards, including environmental tobacco smoke to incorporate into course materials.
 - 4** Identify information sources on culturally appropriate approaches to health care. Also, identify knowledgeable and culturally sensitive health care professionals, educators, and persons in the communities as resources to improve competencies of health care providers treating people of differing cultural heritage and geographic and socio-economic disparities.
 - 5** Examine ways to combine and integrate asthma educational efforts sponsored by various organizations throughout the state to leverage easy accessibility and consistency of training.
 - 6** Work with clinical academic institutions and professional training programs (physicians, nursing, respiratory therapists, pharmacists, etc.) to incorporate course content into existing training programs.
 - 7** Work with area health education centers (AHEC) to incorporate various asthma educational efforts into their schedule of regional training sessions.

Objective 6 By 2008, develop strategies for the reimbursement of services, materials, and equipment consistent with asthma best practices.

- Strategies**
- 1** Educate local community leaders, employers, health plans, and policy makers regarding asthma benefit coverage issues and the impact on cost and quality of life.
 - 2** Using the medical home and chronic care model frameworks for the care of patients with asthma, and the NHLBI guidelines for the

treatment of asthma, develop the list of covered health care services necessary to fully comply with NHLBI guidelines in the context of the care framework.

- 3** Inventory the current health care benefit designs offered by the government and commercial insurers to determine if covered services are consistent with asthma best practices. Identify gaps in coverage across payers and within a particular payer.
- 4** Examine State and Federal laws for coverage of asthma supplies and educational services similar to existing legislation for coverage of diabetic supplies and educational services.
- 5** Demonstrate the potential for advantageous health and economic outcomes by convening an ad hoc financial work group to gather and evaluate existing data on the cost benefit and cost effectiveness of “best practice” asthma management strategies.
- 6** Facilitate participation and public reporting of asthma Health Employer Data and Information Set (HEDIS) measures by all payers in Indiana with annual statewide distribution of results comparing the different payers.
- 7** Establish and work with an advisory committee of employers, government, health plans, clinicians, and others to explore and ensure adequate payer coverage for individual and/or group asthma educational programs.

Goal 2 Future Indiana health care providers who will care for Hoosiers with asthma will receive a comprehensive core asthma curriculum.
Lead Agency: ISDH

Objective 1 By 2008, develop core curriculum standards to be incorporated into Indiana training programs for future primary care physicians, nurses, pharmacists, respiratory therapists, and other related professional training programs.

- Strategies**
- 1** Establish a multidisciplinary core asthma teaching curriculum committee.
 - 2** Identify and evaluate existing asthma teaching programs appropriate for each type of student program.
 - 3** Review the current level and content of asthma education specific to each type of training program in Indiana and identify the additional asthma education needs.
 - 4** Collaborate with the Environmental Quality Workgroup to identify and develop curriculum content relating to environmental and work-related hazards that affect patients with asthma.

- 5 Identify the most effective teaching formats to introduce asthma related materials.

Objective 2 By 2008, distribute the core curriculum standards to academic institutions and training programs.

- Strategies**
- 1 Meet with training program directors about the asthma core curriculum and implementation guidelines.
 - 2 Seek out interested individuals in the training programs to implement core curriculum standards into course content and/or become instructors of the curriculum.
 - 3 Monitor status of integration of curriculum standards into the training programs.
 - 4 Offer “teaching teams” from the membership of InJAC to help with the education process.

Objective 3 By 2009, evaluate the degree to which the asthma core curriculum has been incorporated into health professional training programs for future health care providers in Indiana.

- Strategies**
- 1 Establish competencies for asthma care specific for each type of health care provider.
 - 2 Determine percentage of academic institutions and training programs that adopted the asthma core curriculum.
 - 3 Develop a scorecard of compliance indicators to evaluate the integration of core asthma curriculum standards in those training programs.

Goal 3 People with asthma will have a medical home in which their asthma management consists, at the least, of a source of first-contact care, person-focused care over time, comprehensive and coordinated care.

Lead Agency: ISDH

Objective 1 By 2009, 25% of health care providers treating persons with asthma will have an understanding of the medical home concept and how to facilitate patient participation.

- Strategies**
- 1 Educate health care providers about the concepts of a medical home and implementation of those services into their practices, through, for example, professional associations and publications, conferences, training sessions, CEU and CME courses, website, etc.
 - 2 Facilitate patient direction and navigation to a medical home through collaboration with those health care systems outside the

medical home (for example, emergency rooms, urgent-care facilities) that patients may be consistently accessing for care.

- 3** Work with health care payers to align primary care reimbursement mechanisms with the comprehensive services provided by physicians caring for children in a medical home.
- 4** Collaborate with health care systems to develop mechanisms within these systems to increase communication and coordination of services and to provide medical home providers with access to patient specific health care information.

Objective 2 By 2009, there will be a 5% increase of primary care providers who treat asthma patients that implement elements of the medical home in their practice.

- Strategies**
- 1** Work with Indiana professional organizations, for example, Indiana chapters of AAFP, AAP, etc. to develop and distribute educational materials and expectations to health care providers treating asthma patients regarding the implementation of elements of the medical home concept into their practices.
 - 2** Use a standardized audit and feedback mechanism tool to establish a baseline performance rate, for example, the Center for Medical Home Improvement tool or one similar to the Clinic Assessment Software Application – Assessment, Feedback, Incentives and eX-change (CASA-AFIX) project.
 - 3** Provide the audit results and feedback to health care providers along with recommendations for how to change their practices to improve their results (e.g. academic detailing, collaboration and/or audit-feedback models for facilitating practice changes).
 - 4** Explore community partnerships to support academic detailing about the effectiveness of an asthma medical home.
 - 5** Evaluate the effectiveness of interventions through remeasurement and comparison to baseline data.

Objective 3 By 2006, in collaboration with the Public Education and Children and Youth Workgroups, provide education materials, resources and mechanisms or tools to health care providers to facilitate coordination of care for their asthma patients with community-based resources, organizations, and schools.

- Strategies**
- 1** Incorporate community-based asthma care resources developed by the Public Education Workgroup into education materials.
 - 2** Identify effective existing models for implementing cross-health care delivery system collaborative approaches to chronic care/disease

management and care coordination (including pharmacies, primary care physicians, asthma specialists, emergency departments, hospitals, school systems, early care facilities, public health, community agencies).

- 3** Establish and support, in collaboration with the Children and Youth Workgroup, the development of networks of parents of children with asthma within schools through, for example, hospital based asthma programs, school nurses, and parent-school organizations.
- 4** Work with Children and Youth Workgroup, school nurses, and representatives from schools and regulated early care settings to implement procedures for development of individualized health plans for children with asthma that will include an asthma action plan.
- 5** Assist the Public Education Workgroup regarding inclusion of the importance of having a primary health care provider for asthma care message into their awareness and educational campaigns.

Objective 4 By 2009, develop a model asthma benefit plan that supports the medical home and chronic care model frameworks, including proactive continuous coverage for persons with asthma.

- Strategies**
- 1** Inventory the current health care benefit designs offered by government and commercial insurers to identify existing gaps in covered services and reimbursement for those services consistent with the medical home and asthma care guidelines.
 - 2** Work with legislators, insurance companies, and other interested parties to ensure there is no exclusion from coverage due to preexisting conditions in individual insurance plans.
 - 3** Collaborate with Indiana Office of Medicaid Policy and Planning (OMPP) to champion continuous enrollment in Medicaid for patients with persistent asthma.
 - 4** Work with Indiana OMPP to redesign the Medicaid covered benefits or to evaluate the need for any rule changes based on the model benefit plan.
 - 5** Develop a reimbursement model to discuss with health payers to enable appropriate reimbursement that supports the provider practices to function as medical homes.

implementation evaluation plan

Evaluation is essential to the overall process of implementing an effective asthma plan.⁽²⁾ Program evaluation can measure how effectively the program is progressing toward the desired outcomes. Evaluation of *A Strategic Plan for Addressing Asthma in Indiana (Indiana Asthma Plan)* will include performing assessments during the initial phase of implementation and throughout the implementation process to gauge progress and revise strategies as needed. A second component of the evaluation process will be summative, measuring the impact of the *Indiana Asthma Plan* upon completion of its key elements as defined by the goals and objectives.⁽²⁾

The Indiana Joint Asthma Coalition (InJAC) Steering Committee will oversee the evaluation process and ensure that the findings of the evaluation are shared with the persons involved in the implementation of the *Indiana Asthma Plan* goals, objectives, and strategies. The findings will measure the success in achieving the goals focused on reducing the burden of asthma in Indiana.

Purpose

The evaluation of the *Indiana Asthma Plan* serves many valuable purposes. The different purposes are reflective of the stage of development and implementation of the program as well as who will use findings of the evaluation. The purposes of the evaluation include the following:

- To provide information about the status of its short-term, intermediate, and long-term outcomes
- To monitor program activities to ensure that they are conducted as planned

- To provide process and impact data necessary for Indiana's decision makers to monitor and continually assess the efficacy of the program components and the need for modifications
- To provide information to determine whether limited resources are being used in the most cost-effective manner
- To document and measure the overall program's effectiveness
- To demonstrate that a program is functioning as planned, achieving its objectives, fiscally responsible and making a significant contribution to health

Evaluation measures will be ongoing with results being provided to the responsible InJAC workgroup. The workgroups will use the measurement data to monitor progress toward program goals and to improve program effectiveness and efficiency where needed.

Evaluation information may also be used to decide how to allocate resources, mobilize community support, redistribute or expand the locations where the intervention was planned, or focus program resources on a specific population. InJAC recognizes that sustaining successful implementation of the *Indiana Asthma Plan* requires the ability to foster continued support by the stakeholders as well as attracting new partnerships and financial support.

Scope

Evaluation of the *Indiana Asthma Plan* will include both process measures and outcome measures. Process measures collected throughout the implementation phase will provide information regard-

implementation evaluation plan

ing how well the *Indiana Asthma Plan* is being implemented and whether things are being done right. Outcome measures will assess the results of the overall *Indiana Asthma Plan* implementation in reducing the burden of asthma in Indiana.

The evaluation will guide the *Indiana Asthma Plan's* strategies within the objectives at all stages of the implementation phase. For example, evaluation can assess whether the awareness campaign changes the public's understanding of asthma as a public health issue, or whether an educational program changes the practices of the health care provider in managing the care of a person with asthma. Initially, the intent of the evaluation will be focused on process measures to assess and help improve the strategies developed to facilitate meeting the objectives. As the *Indiana Asthma Plan* matures, the evaluation will be geared to outcome measures to assess the overall effectiveness.

The *Indiana Asthma Plan* includes performance outcome measures associated with each goal. Outcome measures may be evaluated in stages, for example, short-term, intermediate and long-term. Examples of evaluations of short-term outcomes include collecting baseline data or developing technical information tools. Evaluations of intermediate or long-term outcomes will be used to assess progress of achievement of the objectives, such as increased use of asthma action plans, increased adherence to prescribed medication regimens and recognition of public education messages.

To assess the *Indiana Asthma Plan* progress toward achieving the objectives and goals, Indiana will need to expand surveillance data to answer specific evaluation questions. For example, the evaluation process will need to provide information about the status of intermediate outcomes, such as knowledge or policy implementation. As documented in specific strategies, examples of additional data collection methods include specific surveys or obtaining feedback from education program participants.

Focus

The focus of evaluation will be to determine the success in meeting the goals and objectives outlined in the *Indiana Asthma Plan*. Specific direction was provided to the InJAC workgroups to develop clearly defined objectives and strategies to achieve *Indiana Asthma Plan* goals. The measurable objectives can be tied to evaluation mechanisms that will assess progress and/or success, or identify lack of success or barriers that require revisions in current or future interventions. The *Indiana Asthma Plan* strategies are fluid, and therefore, the evaluation process will be flexible to adapt to changes in the interventions and/or outcomes. One of the ways the process will be flexible is that many of the objectives include strategies for obtaining baseline data. As baseline data becomes available, the objective statements may need to be adjusted for subsequent years of the *Indiana Asthma Plan*.

The *Indiana Asthma Plan* objectives describe the change to be expected within a given time frame. Generally, the objectives are stated in terms that target a percent of change or expected result by a specified year. For example, "By 2007, increase by 10% the number of health care providers who provide asthma education and written asthma action plans for people with asthma". The strategies then describe what actions are being implemented to impact the intended change. Attaining the objectives is the intended result of successful strategies.

In summary, the objectives and strategies were designed to provide InJAC and its partners a guide for implementing actions to address the critical issues believed to have the greatest impact in reducing the burden of asthma in Indiana. The evaluation process will measure the effectiveness of these actions in achieving the objective and ultimately the *Indiana Asthma Plan* goals.

Responsibilities

The InJAC Steering Committee and the Data and Surveillance Workgroup will oversee the evalu-

ation process. The findings of the evaluation will provide the InJAC workgroups with data to measure the progress of the interventions and to guide the approach to attaining the objectives and goals.

InJAC Workgroups

The InJAC workgroups will oversee evaluation of the objectives and goals for their respective topic areas. The process for each workgroup includes an annual submission of a workplan that outlines the planned activities including data collection and evaluation measures to the InJAC Data and Surveillance Workgroup.

As the workgroups continue to focus on quality improvement efforts in reducing Indiana's asthma burden, ongoing data collection during the plan implementation evaluation will enable the InJAC workgroups and staff to:

- Create the best possible programs
- Learn from mistakes
- Make modifications as needed
- Monitor progress toward plan goals
- Judge the success of the plan in achieving its short-term, intermediate, and long-term outcomes

Information about the effectiveness of an intervention will be used to make decisions about the continuation, refinement, or expansion of the strategy or plan.

InJAC Data and Surveillance Workgroup

The InJAC Data and Surveillance Workgroup will provide advice and oversight regarding evaluation of the *Indiana Asthma Plan*. The Data and Surveillance Workgroup will meet at least annually with the individual workgroups to discuss the workgroup's planned activities and performance/evaluation measures. The Data and Surveillance Workgroup will provide access to available data and technical assistance in understanding and analyzing the data.

InJAC Steering Committee

The InJAC Steering Committee is comprised of representatives from the Indiana State Department of Health and Indiana Department of Environmental Management, the Coalition chairperson and the chairperson of the Data and Surveillance Workgroup, Public Education Workgroup, Environmental Quality Workgroup, Children and Youth Workgroup and the Health Care Provider Workgroup. The InJAC Steering Committee meets regularly to direct the development and implementation of the *Indiana Asthma Plan*. The members of the Steering Committee also serve as communicators and facilitators of the statewide plan.

The InJAC Steering Committee will oversee the evaluation of the implementation of the *Indiana Asthma Plan*. The Committee's responsibilities include:

- Finalize the formal program evaluation process
- Identify staff resources to conduct and oversee evaluation of the program implementation
- Define the users of the evaluation report
- Meet regularly to review and discuss the evaluation plan, activities of the workgroups, and data issues
- Report to the workgroups at least quarterly regarding the status of the Plan's evaluation
- Oversee and approve the annual evaluation report.
- Formalize recommendations resulting from the evaluation findings
- Identify potential audiences for recommendations
- Monitor the effectiveness of the workgroup activities, focusing on both the health and environmental solutions to reduce the burden of asthma in Indiana.

Lessons learned from the implementation evaluation will be used to direct and promote a successful asthma plan that will benefit the people of Indiana for years to come.

potential partners and participating organizations

Aesculapian Society (Indianapolis Association of Minority Physicians)

Area Health Education Centers

American Lung Association of Indiana

Asthma Alliance of Indianapolis

Clarian Consortium for Respiratory Care Education

Community Action Programs

Community Health Centers

(e.g. state and federally funded community health centers, rural health clinics and nurse managed clinics, etc.)

Environmental Protection Agency

Health Insurance Organizations & Health Plans

Hoosier Environmental Council

Hoosier Uplands

Housing and Urban Development Agency

Improving Kids Environment

Indiana Association of Area Agencies on Aging

Indiana Association for the Education of Young Children

Indiana Association of Public School Superintendents

Indiana Association of School Business Officials

Indiana Association of School Nurses

Indiana Association of School Principals

Indiana Asthma and Allergy Society

Indiana Black Expo, Inc

Indiana Chapter of the American Academy of Family Practice

Indiana Chapter American Academy of Pediatrics

Indiana Chapter of American College of Physicians

Indiana Chapter of the American Lung Association

Indiana Civil Rights Commission

Indiana College of Clinical Pharmacists

Indiana Employers Forum

Indiana Department of Commerce

Indiana Department of Education

Indiana Department of Labor

Indiana Education Service Centers

Indiana Environmental Health Association

Indiana Family & Social Services Administration

Indiana Head Start Association

Indiana Health Professions Bureau

Indiana High School Athletic Association

Indiana Hospital & Health Association

Indiana Housing Finance Authority

Indiana Minority Health Coalition

Indiana Parent Information Network

Indiana Pharmacist Alliance

Indiana Pharmacist Association

Indiana Professional Standard Board

Indiana Professional Licensing Agency

Indiana Public and Private Schools

Indiana Public Health Association

Indiana Primary Health Care Association

Indiana Public Health Association

Indiana Rural Health Association

Indiana School Boards Association

Indiana Schools of Nursing: Indiana University,

Purdue University, University of Indianapolis,

Indiana State University, Indiana Wesleyan College

Indiana University School of Medicine

Indiana Schools of Pharmacy: Purdue University, Butler University

Indiana Schools of Allied Health

Indiana Society for Respiratory Care

Indiana State Office Building Commission

Indiana State Library

Indiana State Teachers Association

Indiana Thoracic Society

Indiana Tobacco Prevention and Cessation Agency

(Local Community Partnerships & Minority Partnerships)

Indiana Vocational Technical School

Knozone

Latino Institute

Local Health Departments

Occupational Safety and Health Administration

Office of Indiana State Chemist

Marion County Health Department

Medical, Pharmacy, Nursing and Respiratory Therapy professional associations/societies

Purdue University Cooperative Extension Service

Snyder Family Resource Center (Riley Hospital)

references

1. Centers for Disease Control and Prevention. Asthma prevalence and control characteristics by race/ethnicity – United States, 2002. MMWR 2004;53:145-8.
2. Madden J, Boss L, Kownaski M, Lambright L, Lee C, Luttinger, D, et. al. Guide for state health agencies in the development of asthma programs. Atlanta, (GA):Centers for Disease Control and Prevention, May 2004.
3. Dey AN, Schiller JS, Tai DA. Summary health statistics for U.S. children: National Health Interview Survey, 2002. National Center for Health Statistics 2004;Vital Health Stat 10(221).
4. Indiana Joint Asthma Coalition (InJAC) Data Collection and Surveillance Workgroup, The Burden of Asthma in Indiana, December, 2004.
5. Centers for Disease Control and Prevention. Asthma prevalence, health care use and mortality, 2000-2001 [online]. [cited 2004 Sep 8]. Available from: <http://www.cdc.gov/nchs//products/pubs/pubd/hestats/asthma/asthma.htm>
6. Lara M, Nicholas W, Morton S, Vaiana M, Genovese B, Rachelefsky G. Improving childhood asthma outcomes in the United States, a blueprint for policy action. Santa Monica (CA): Rand Health, 2001.
7. US Department of Health and Human Services. Actions against asthma: a strategic plan for the Department of Health and Human Services. Washington, DC: US Government Printing Office;2000.
8. National Heart, Lung, and Blood Institute. Morbidity & mortality: 2004 chart book on cardiovascular, lung and blood diseases. U.S. Department Of Health And Human Services: Public Health Service May 2004.
9. Institute of Medicine, Committee on the Assessment of Asthma and Indoor Air. Clearing the air: asthma and indoor air exposures. Washington, DC: National Academy of Sciences, 2000.
10. Institute of Medicine, Committee on Damp Indoor Spaces and Health. Damp indoor spaces and health. Washington, DC: National Academy of Sciences, 2004.
11. National Heart Lung and Blood Institute, National Asthma Education and Prevention Program. Expert Panel Report 2, Guidelines for the diagnosis and management of asthma. Bethesda (MD): National Institutes of Health 1997;Pub No 97-4051.
12. U.S. Department of Health and Human Services. Healthy People 2010 [online]. Washington, DC: U.S. Government Printing Office; 2000 Nov; [cited 2004 Jul 6]. Available from <http://www.healthypeople.gov/Document/tableofcontents.htm#under>

references

13. Behavioral Risk Factor Surveillance System [database on Internet]. Atlanta (GA): Centers for Disease Control and Prevention (US). 2000-2002 [cited 2004 Oct 16]. Available from: <http://www.cdc.gov/brfss/>
14. Indiana Department of Environmental Management, Office of Air Quality [online]. Air Quality Data. 2004. [cited 2004 Oct 16]. Available from www.in.gov/idem/air/amb/data/air_quality_data.html
15. U.S. Environmental Protection Agency. National air quality standards [online]. 2004 Jun [cited 2004 Jun 1]. Available from <http://www.epa.gov/air/criteria.html>
16. Indiana Tobacco Prevention and Cessation. Fact Sheet, Indiana's Tobacco Burden [online]. [cited 2004 Oct 15]. Available from <http://www.in.gov/itpc/Research2.asp?CatID=3>
17. Indiana Tobacco Prevention and Cessation. Fact sheet, protecting Hoosiers from second-hand smoke [online]. [cited 2004 Oct 15]. Available from <http://www.in.gov/itpc/Research2.asp?CatID=3>
18. Clark NM, Partridge MR. Strengthening asthma education to enhance disease control – special report. *Chest* 2002;121:1661-9.
19. Guevara JP, Wolf FM, Grum CM, Clark NM. Effects of educational interventions for self management of asthma in children and adolescents: systematic review and meta-analysis. *BMJ* 2003;326:1308-12.
20. Slutsky P, Bryant-Stephens T. Developing a comprehensive, community-based asthma education and training program. *Pediatr Nurs* 2001;27(5):449-57.
21. Indiana Tobacco Prevention and Cessation (ITPC). Seeing is believing – how exposure to ITPC's media campaign affects tobacco knowledge, attitudes and beliefs among Hoosier adults. Indianapolis (IN): 2003.
22. Croft DR, Peterson MW. An evaluation of the quality and contents of asthma education on the World Wide Web. *Chest* 2002;121:1301-7.
23. Lin S, Gomez MI, Hwang S, Franko EM, Bobier JK. An evaluation of the asthma intervention of the New York state healthy neighborhoods program. *J Asthma* 2004;41:583- 95.
24. Persky V, Coover L, Hernandez E, Contereras A, Slezak, J, Piorkowski, J, et.al. Chicago community-based asthma intervention trial. *Chest* 1999;116:216S-23S.

25. American College of Chest Physicians. A descriptive study of asthma coalitions [online]. 2000 Spring [cited 2004 Jun 4]. Available from: <http://www.chestnet.org/education/hsp/products/asthma/study/>
26. Association of State and Territorial Health Officers, Environmental Council of the States. Catching your breath: strategies to reduce environmental factors that contribute to asthma in children, a report from the working group of representatives from state health and environmental agencies. Washington D.C.; May 2003.
27. National Heart Lung and Blood Institute, National Asthma Education and Prevention Program. Managing asthma: a guide for schools. Bethesda (MD):National Institutes of Health 2002;Pub No 02-2650.
28. National Association of School Nurses. Issue brief: school health nursing services role in health care, asthma management in the school setting [online]. 2002 [cited 2004 Jul 26]. Available from <http://www.nasn.org/briefs/briefs.htm>
29. U.S. Environmental Protection Agency. Indoor air quality tools for schools: managing asthma in the school environment. Research Triangle Park (NC) 2000 May;EPA No. 402-K-00-0003.
30. Epstein BL. Childhood asthma and indoor allergens: the classroom may be a culprit. J Sch Nurs 2001;17 (5):253-7.
31. Centers for Disease Control and Prevention. Strategies for addressing asthma within a coordinated school health program. Atlanta, (GA):Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 2002.
32. Clark NM, Brown R, Joseph CL, Anderson EW, Manlan L, Valero MA. Effects of a comprehensive school-based asthma program on symptoms, parent management, grades and absenteeism. Chest. 2004;125:1671-9.
33. O'Toole BV, Friedman J, Schmitt R. Asthma management, part I: an overview of the problem and current Trends. J Sch Nurs.2002 Jun;18(3):137.
34. Wolf HK, Tumlin J. Using expanded individualized health care plans to assist teachers of students with complex health care needs. J Sch Nurs; 20(3)150-60.
35. McElmurry B. Health education program to control asthma in multiethnic, low-income urban communities. Chest 1999;116:198S-9S.

references

36. U.S. EPA, Office of Air Quality Planning and Standards. Regulatory impact analysis for the particulate matter and ozone national ambient air quality standards and proposed regional haze rule. Research Triangle Park(NC);1997.
37. Morgan MT. A world fit to live in. *World Health, WHO*, May 1989;25-27.
38. Malo JL, Chan-Yeung M. Tables of major inducers of occupational asthma, in: Bernstein LI, Chan-Yeung M, Malo JL, Bernstein DI (eds), *Asthma in the workplace* 2nd Ed [online]. New York: Marcel Dekker [cited 2004 Mar 2]. Available at <http://www.haz-map.com/OA.htm>
39. Caine V. Building healthier neighborhoods, community health assessment volume 1- baseline report and recommendations. Indianapolis: Bowen Research Center; 1995.
40. Indiana Chronic Disease Management Program. Why Does This Initiative Deserve Your Attention?[online]. [cited 2004 July 30]. Available from <http://www.indianacdmprogram.com/Provider/asthma.htm>.
41. Leickly F, Johnson M, Cumming S, Cauldwell L, Smith M, Caine V. Applying the techniques and lessons learned from the national cooperative inner-city asthma study (NCICAS). *J. Allergy Clin. Immunol* 1999;103:S69.
42. Pappas G, Hadden WC, Kozak LJ, Fisher GF. Potentially avoidable hospitalizations: inequalities in rates between US socioeconomic groups. *Am J Public Health* 1997;87:811-16.
43. Friday GA Jr, Khine H, Lin MS, Caliguiri LA. Profile of children requiring emergency treatment for asthma. *Ann Allergy Asthma Immunol* 1997;78:221-4.
44. Hartert TV, Windom HH, Peebles RS Jr, Freidhoff LR, Togias A. Inadequate outpatient medical therapy for patients with asthma admitted to two urban hospitals. *Am J Med* 1996;100:386-94.
45. Indiana University School of Medicine. Fact sheet 2003-2004 [online]. [cited 2004 Aug 16]. Available from <http://www.medicine.iu.edu/about/current.pdf>
46. Sia CJ, Antonelli, R, Gupta VB, Buchanan G, Hirsch D, Nackashi J, et al. American Academy of Pediatrics policy statement, medical home initiatives for children with special needs project advisory committee. *Pediatrics* 2002 Jul;110(1 Pt 1):184-6.
47. Bush J. Recommendations for the future of family medicine. *Fam Pract Manag* [online]. 2004 April [cited 2004 May 31]. Available from: <http://www.aafp.org/fpm/20040400/34reco.html>

48. Starfield B, Shi L. The medical home, access to care, and insurance: a review of evidence. *Pediatrics* 2004;113(.5):1493-8.
49. Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A. Improving chronic illness care: translating evidence into action. *Health Aff* 2001 Nov-Dec;20(6):64-78.
50. Cook D, Greengold NL, Ellrodt AG, Weingarten SR. The relation between systematic reviews and practice guidelines. *Ann Intern Med* 1997;127:210-6.
51. Richards D, Graham P. Do clinical practice education groups result in sustained change in GP prescribing. *Fam Pract* 2003;20(2): 199-206.
52. Blackstone-Hirsch P, Anderson G, Cicutto L, McIvor A, Norton P. Implementing continuing education strategies for family physicians to enhance asthma patients' quality of life. *J Asthma* 2000; 37(3):247-57.
53. Greineder DK, Loane KC, Parks P. Reduction in resource utilization by an asthma outreach program. *Arch Pediatr Adolesc Med* 1995;149(4): 415-20.
54. Sullivan SA, Elixhauser A, Buist AS, Luce BR, Eisenberg J, Weiss KB. National Asthma Education and Prevention Program working group report on the cost effectiveness of asthma care. *Am J Respir Crit Care Med* 1996;154(3):S84-S95.
55. Seifer SD, Vranizan K and Grumbach K. Graduate medical education and physician practice location. Implications for physician workforce policy [online]. *JAMA* 1995: [cited 2004 Aug 16];274(9). Available from <http://jama.ama-assn.org/cgi/content/abstract/274/9/685>
56. Spencer, J., Learning and teaching in the clinical environment. *BMJ* 2003;326(7389):591-4.
57. Helwig A, Bower D, Wolff M, Guse C. Residents find clinical practice guidelines valuable as educational and clinical tools. *Fam Med* 1998;30(6):431-5.
58. Maclean J, Johnson M, Rogers R, Waller J, Krauss J, Fick D. Residents' attitudes toward, knowledge of, and use of clinical guidelines: a survey. *J Clin Outcomes Manage* 2003 Oct;(10):531-4.

bibliography

American Lung Association. Open Airways for Schools [online]. [cited 2004 Aug 2]. Available from <http://www.lungusa.org/site/pp.asp?c=dvLUK9OoE&b=44142>

Bailey WC, Richards JM Jr, Brooks CM, Soong SJ, Windsor RA, Manzella BA. A randomized trial to improve self-management practices of adults with asthma. *Arch Intern Med* 1990;150(8):1664-8.

Bolton MB, Tilley BC, Kuder J, Reeves T, Schultz LR. The cost and effectiveness of an education program for adults who have asthma. *J Gen Intern Med* 1991;6:401-7.

Boulet LP, Chapman KR, Green LW. Asthma education. *Chest* 1994;106(4): 184S-96S.

Boulet LP. Asthma education: what has been its impact? *Can Resp J* 1998; Jul; 5(Suppl A):91A-6A.

Cooley CW, McAllister JW. Building medical homes: improvement strategies in primary care for CSHCN. *Pediatrics* 2004;113:1499-1506.

Gibson PG, Powell H, Coughlan J, Wilson AJ, Abramson M, Haywood P, et.al. Self-management education and regular practitioner review for adults with asthma. *Cochrane Database Syst Rev* 2003;(1): CD001117.

Indiana Health Care Professional Development Commission, 1995 Annual Report, Combined Edition, Chapter 2 Health Care Professional Distribution in Indiana [online]. Indiana State Department of Health [cited 2004 Aug 16]. Available from: <http://www.in.gov/isdh/publications/pubs/annual-r95.htm>

Lieu TA, Quesenberry CP Jr, Capra AM, Sorel ME, Martin KE, Mendoza GR. Outpatient management practices associated with reduced risk of pediatric asthma hospitalization and emergency department visits. *Pediatrics* 1997;100(3 Pt 1):334-41.

Jansen S. Self management of asthma. lesson 6, volume 16, [online] American College of Chest Physicians, 2001. [cited 2004 July 14] Available from http://www.chestnet.org/education/online/pccu/vol15/lessons5_6/lesson06.php

Kotses H, Stout C, McConnaughy K, Winder JA, Creer TL. Evaluation of individualized asthma self-management programs. *J Asthma*, 1996;33:113-8.

Leickly F, Wade S, Crain E, Kruszon-Moran D, Wright E, Evans R. Self-reported adherence, management behavior, and barriers to care after an emergency department visit by inner city children with asthma. *Pediatrics* 1998;101(5);8.

Murray MD, Stang P, Tierney W. Health care use by inner-city patients with asthma. *J Clin Epidemiol* 1997;50:167-174.

O'Toole BV, Friedman J, Schmitt R. Asthma management, part II: pharmacologic management. J Sch Nurs 2002;18(5):257-69.

Ritchie IM, Lehnert RG. Health effects of ozone and other environmental measures on children in the Indianapolis metropolitan area. Indiana University Purdue University Indianapolis: School of Public and Environmental Affairs; 2001.

U.S. Environmental Protection Agency. National air quality 2001 status and trends. particulate matter. 2004 Sep [cited 2004 Oct 16]. Available from <http://www.epa.gov/air/airtrends/aqtrnd01/pmatter.html>

Williams SG, Schmidt DK, Redd SC, Storms W. Key clinical activities for quality asthma care – recommendations of the national asthma education and prevention program. Morbidity and Mortality Weekly Report. Atlanta, (GA):Centers for Disease Control and Prevention;2003 March 28;52(RR-6).

Additional Website Resources

Annual State of the Environment 2003 Report - Asthma, Indiana Department of Environmental Management, www.in.gov/ide/soe2003/children/asthma.html.

Center for Medical Home Improvement website - <http://www.medicalhomeimprovement.org/outcomes.htm>

Chronic Care Model Bibliography, <http://www.improvingchroniccare.org/resources/bibliography/ccm.html>.

Family Practice Management website – www.aafp.org/fpm

Healthy People 2010: www.healthypeople.gov

Indiana Asthma Program – www.in.gov/isdh

Indiana Chronic Disease Management Program website – www.indianacdmprogram.com.

National Asthma Education and Prevention Program website – www.nhlbi.nih.gov/about/naepp.

National Medical Home Learning Collaborative, American Academy of Pediatrics National Center of Medical Home Initiatives for Children with Special Needs <http://www.medicalhomeinfo.org/resources/MedHomeGrantee.html>

glossary

A

Academic detailing - a non-biased approach of assisting providers with evidence-based information in a collaborative manner that will facilitate safe, rational, and cost-effective care management.

Allergen - a substance that can trigger an inappropriate immune response, leading to sensitization of a genetically predisposed individual and with re-exposure can elicit asthma symptoms.

ANSI/ASHRAE Standard 62-2001 Ventilation for Acceptable Indoor Air Quality - a voluntary standard that provides guidelines for ventilation and comfort to reduce indoor air quality problems in a variety of buildings; approved by the American National Standards Institute (ANSI) and the American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE).

Asthma - a chronic inflammatory disease of the airways. When a person has asthma, the inside walls of the airways of the lungs are inflamed, making them more sensitive and more reactive than the airways of a person who does not have asthma.

Asthma Action Plan - specific written guide of individual asthma information on medications, peak flow readings, triggers and emergency plan of action.

Asthma Alliance of Indianapolis - initiated in 1997, this coalition is comprised of the Marion County Health Department, American Lung Association, Anthem Blue Cross Blue Shield, and five major Indianapolis hospitals, including Clarian Health Partners, St. Vincent, St. Francis, Community Hospitals, and Wishard Health Services. Through its health care professionals (including

pediatric medicine, nursing, respiratory therapy, social work, and environmental health), the Alliance takes a multidisciplinary approach to asthma education, prevention, and treatment in the community.

Asthma best practices - Guidelines derived from a consensus of leading asthma researchers from academic, clinical, federal, and voluntary institutions and based on scientific evidence supported by literature. Essential components of asthma management include assessment and monitoring, control of factors contributing to asthma severity, pharmacotherapy and education for a partnership in care.

Asthma burden - the impact of asthma on the person diagnosed with the disease, his/her family and caregivers, and the greater community in which the person lives; includes the cost of the disease and the impact on the quality of life for the individual with the disease and his/her caregivers.

Asthma coalitions - a union or alliance of organizations and people representing an array of interests who unite around clear goals to promote and provide asthma awareness and education to the general public and people diagnosed with asthma.

Asthma management program - health promotion and health education activities designed to reduce the asthma burden in communities, homes, work places, schools, and regulated early care settings. An asthma management program should include education for all individuals involved with asthma care and management programs, policies and procedures for administering medication and controlling exposure to environmental triggers, protocols for response to a severe asthma episode, and a written action plan for every individual with asthma.

Asthma Resource Guide - web based listing of asthma educational materials, related links, certified asthma educators, speakers list, support groups and asthma related programs and services.

B

Biological agent – Biological agents are living things or are produced by living things. Common biological agents include mold, dust mites, pet dander (skin flakes), droppings and body parts from cockroaches, rodents and other pests or insects, viruses, and bacteria. Biological agents can be inhaled and can cause many types of health effects including allergic reactions, respiratory disorders, hypersensitivity diseases, and infectious diseases. Also referred to as “microbiologicals” or “microbi-als.”

Building-related professional – professionals responsible for the design, construction, maintenance, renovation, demolition, transfer, and inspection of homes and commercial buildings; includes architects, builders, inspectors, realtors, heating and ventilation engineers, and other professionals.

Burn ban ordinance – a regulation that specifies limitations on burning specific wastes outdoors; local ordinances refer to those for municipalities.

C

Capacity – development of an organization’s core skills and capabilities, such as leadership, management, finance and fund-raising programs and evaluation in order to build the organization’s effectiveness and sustainability.

CAPS – Community Action Program; state program of community-based agencies that provide social services including energy assistance, weath-

erization assistance, housing services, emergency shelter, and other community services and outreach programs.

Child Care Center – a nonresidential building where at least one child receives child care from a provider: 1) while unattended by a parent, legal guardian, or custodian; 2) for regular compensation, and 3) for more than 4 but less than 234 hours in each of 10 consecutive days per year, excluding intervening Saturdays, Sundays, and holidays. Child Care Centers are licensed under Indiana Rule 4.7 (47o IAC 3-4.7) (Source: 47o IAC 3-4.7).

Child Care Home – a residential structure in which at least six children (not including related children) at any time receive child care from a provider: 1) while unattended by a parent, legal guardian, or custodian, 2) for regular compensation, and 3) for more than 4 hours but less than 24 hours in each of 10 consecutive days per year, excluding intervening Saturdays, Sundays, and holidays. The term does not include a child care center. Child Care Homes are licensed under Indiana Rule 1.1 Child Care Homes (47o IAC 3-1.1) (Source: 47o IAC 3-1.1).

Community health asthma outreach worker - outreach worker who assesses the home environment, provides social support and access to community resources, and assists families in identifying and resolving issues that impede successful asthma management.

Community partnerships - networks within the community to work together to identify and assess a problem; develop and implement a plan of action to reduce the problem; and evaluate the short and long-term outcomes of the plan. Community partners for schools and early care facilities working with children with asthma include, but are not

limited to families, health care providers, businesses, health plan organizations, school-based health centers, environmental groups, etc.

Competencies - the ability to use knowledge, understanding, practical and thinking skills to perform effectively to the standards required.

Credentialed Asthma Educator – There are two national credentialing bodies that oversee asthma credentialing encompassing asthma education. The National Asthma Educator Certification Board (NAECB) is the accrediting body for the AE-C (Asthma Educator-Certified) credential. The National Institute for Standards in Pharmacist Credentialing (NISPC) is the accrediting body for the CDM (Certified Disease Manager in asthma) credential.

E

Environmental hazard - refers to substances (chemical or biological agents) or conditions in the indoor or outdoor environment that can exacerbate asthma. Environmental hazards for asthma include, but are not limited to, sources of allergens (dust mites, cockroaches, mold, pollen, pet dander) or irritants (environmental tobacco smoke, strong odors, unvented stoves or heaters, cold air, smog, ozone, diesel engine exhaust, outdoor burning, wood smoke).

Enviro-Schools Program – Typically, this type of program is used by industry to provide a structured approach for managing environmental and regulatory responsibilities to improve overall environmental performance. IDEM plans to implement a pilot project to evaluate whether this type of an integrated-system approach and tool can serve schools in their effort to meet and exceed environ-

mental, health and safety standards. The goal is to institute a state collaborative approach to create an Environmental Management System (EMS) framework for schools to adopt to reduce environmental hazards for children in school facilities.

Exacerbation – any worsening or aggravation. Onset can be acute and sudden, or gradual over several days.

F

Fine particulate matter – very small particles that can remain in the air for long periods of time; technically defined as particles with an aerodynamic diameter of less than 2.5 microns.

Fumigation – the application of smoke, vapor, or gas for the purpose of disinfecting or of destroying pests

H

Health Care Provider - Health care professionals who specialize in the management of certain conditions. In the case of asthma, the health care providers may include a physician, a nurse practitioner, a respiratory therapist, a pharmacist, and a credentialed asthma educator

Health Care Provider training programs - Residency programs including primary care; pediatrics, internal medicine, family practice, and emergency medicine. Also nursing schools, pharmacy schools, respiratory technician training programs, and allied health schools.

Health care systems – organizations that contribute to asthma services and programs or that directly impact asthma care through administrative, finan-

cial, regulatory or geographic relationships. Examples include health plans and insurers, health-related government programs, medical groups and clinics, hospitals, and local public health departments.

HEDIS – Health Employer Data and Information Set – the set of nationally recognized performance measures coordinated by the National Committee for Quality Assurance (NCQA) for managed health care plans.

High-risk populations – groups that have individual or composite factors that predispose them to poor health outcomes.

HIPAA – Health Insurance Portability and Accountability Act. National standards to protect the privacy of personal health information.

Housing Authority – local agencies that administer federally subsidized programs including low income housing, Section 8 rental assistance, and housing counseling

I

IDEM 5-Star Recognition Program – a program sponsored by the Indiana Department of Environmental Management in which child care providers are recognized for assessing their facilities for environmental hazards and taking steps to reduce and eliminate environmental hazards; sponsored by IDEM.

IESC - Indiana Education Service Centers – Six regional centers that provide primary contact and regional resources for supporting educational needs. These centers include the Southern Indiana Education Center in Jasper (Region 1), Wilson Education Center in Charlestown (Region 2), West

Central Education Center in Greencastle (Region 3), East Central Educational Service Center in Connersville (Region 4), Wabash Valley Education Center in West Lafayette (Region 5), and Northwest Indiana Education Center in Highland (Region 6)

Indiana Childcare Health Consultant Program – Program in which professional with specialized training and experience in child health issues provide guidance and technical assistance to child care providers on a wide range of health and safety topics, including assistance for children with special, health, medical and/or behavior needs

Indiana Chronic Disease Management Program (ICDMP) – Disease management program implemented by the Indiana Office of Medicaid Policy and Planning (OMPP), for persons with diabetes, asthma, congestive heart failure, hypertension and recipients who are at high risk of chronic disease). The goal of the ICDMP is to build a comprehensive, locally based infrastructure that is sustainable and that will strengthen the existing public health infrastructure and help improve quality of health care in all populations, not just Medicaid recipients.

Indiana Sanitary Schoolhouse Rule (Schoolhouse Rule) – ISDH rule (410 IAC 6-5.1) as amended in 1986, which provides for the location, construction, and maintenance of school buildings or facilities.

Indoor air quality – the combination of indoor air pollution and indoor climate; indoor air quality is the result of the dynamic interaction of complex factors including sources of pollutants odors; design, maintenance, and operation of building ventilation systems; moisture and humidity; and occupant perceptions and susceptibilities.

Indoor air pollution – chemical, physical, or biological agents in indoor air; sources of indoor air pollution include but are not limited to people, animals, activities; room furnishings; building materials; heating, ventilating, and air-conditioning systems; outdoor air; water leaks; and so forth.

Indoor Air Quality (IAQ) Design Tools for Schools – an EPA initiative that ‘provides both detailed guidance as well as links to other information resources to help design new schools as well as repair, renovate and maintain existing facilities. Though its primary focus is on indoor air quality, it is also intended to encourage school districts to embrace the concept of designing High Performance Schools, an integrated, “whole building” approach to addressing a myriad of important priorities, such as energy efficiency, indoor air quality, day-lighting, materials efficiency, and safety.

Indoor Air Quality (IAQ) Tools for Schools – an EPA initiative that ‘shows schools how to carry out a practical plan of action to improve indoor air problems at little or no cost using straightforward activities and in-house staff. The concept includes checklists for all school employees, a flexible step-by-step guide for coordinating the checklists, an Indoor Air Quality Problem Solving Wheel, a fact-sheet on indoor air pollution issues, and sample policies and memos.

Indoor climate – temperature, humidity, lighting, air flow and noise levels in a habitable structure or conveyance. Indoor climate can affect indoor air pollution.

InJAC – Indiana Joint Asthma Coalition. A statewide coalition formed to develop a state strategic plan designed to reduce asthma morbidity and mortality in Indiana and to guide the future of Indiana’s state asthma program.

Integrated Pest Management – an approach for pest control that is based on the understanding of pest biology and habits. This approach uses a number of strategies such as improved sanitation, exclusion, monitoring to reduce the use of pesticides to control pests.

Irritant – a gas, vapor, fume, smoke or chemical that can trigger an asthma episode.

M

Medical home – Defined by the following characteristics: medical care of infants, children, and adolescents ideally should be accessible, continuous, comprehensive, family centered, coordinated, compassionate and culturally effective. Care should be delivered and directed by well-trained physicians who provide primary care and help to manage and facilitate essentially all aspects of care. The physician should be known to the child and family and should be able to develop a partnership of mutual trust with them.

N

Nonattainment area – any area that has been designated as not meeting the standards established by the U.S. Environmental Protection Agency for any criteria pollutant.

O

Occupational Asthma – a condition characterized by respiratory symptoms, variable airflow limitation and/or airway hyper responsiveness caused by exposure to an agent(s) in the workplace. Occupational asthma can be due either to sensitizer (allergic occupational asthma) or irritant agents (reactive airway dysfunction syndrome). Some occupations including, but not limited to, plastics workers,

metal workers, bakers, millers, farmers, grain elevator workers, laboratory workers, woodworkers, drug manufacturers, and detergent manufacturers are at higher risk for occupational asthma.

OSHA Log of Injuries and Illnesses – Form 300 that must be completed by employers to track information about workplace injuries or illnesses that involve loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid; significant work-related injuries or illnesses that are diagnosed by a physician or licensed health care professional; and work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12.

Ozone - an odorless, colorless gas that forms naturally in the atmosphere

P

Peer Education: education from someone of the same rank, an equal.

Pesticide – a substance that kills harmful organisms (for example, an insecticide)

Public Awareness Campaign – a public health communication strategy targeting intended audiences in various settings, through media-related channels and activities.

R

Regulated Early Care Settings-all licensed child care centers/homes and registered ministries from the Indiana Social Services Administration, Headstart and Earlystart Programs and regulated and/or IAEEYC (Indiana Association for Education of Youth Children) accredited preschools.

S

Schools-all Indiana public and private schools accredited by the Department of Education.(IC 20-8.1-1-1)

School asthma management program – school-based activities and services, which are directed toward reducing the asthma burden in schools. Activities include health promotion and health education.

School building or facility – any structure used in connection with the operation of schools, including the site; equipment, heating, ventilation, and air conditioning systems; drainage; driveways; plumbing; playgrounds; athletic fields; and other necessary structures and improvements

School Staff -All persons employed or contracted for service by an Indiana School accredited by the Indiana Department of Education (IC 20-8.1-1-1). Includes but not limited to teachers, nurses, principals, superintendents, school board members, school business officials, maintenance employees, custodians, cafeteria workers, support staff, contracted employees and health and teacher aides.

Secondary Prevention - activities designed with the intent to reduce the progress of a disease.

Secondhand Tobacco Smoke – also called environmental tobacco smoke; the combination of side stream smoke (smoke emitted between the puffs of a burning cigarette, pipe, or cigar) and mainstream smoke (the smoke that is exhaled by the smoker)

SENSOR (Sentinel Event Notification System for Occupational Risks) asthma program – surveillance program designed to reduce asthma in the workplace; includes doctor surveillance, telephone

interviews, work-site investigations, and development and dissemination of findings.

Solid Waste Management District – single or multiple counties that are responsible for establishing a solid waste management policy for their areas that reflects the needs of the district and provides an integrated approach to solid waste management.

Source – any place or object from which pollutants are released.

Specialty – Specialty care for asthma may be provided by an allergist, pulmonologist, or other physician with expertise in asthma management.

Surveillance – the ongoing systematic collection, analysis, and interpretation of outcome-specific data for use in the planning, implementation and evaluation of public health practice. A surveillance system includes the functional capacity for data collection and analysis as well as the timely dissemination of these data to persons who can undertake effective prevention and control activities. Public health officials use surveillance to understand changes in rates of disease in different locations or populations, to help evaluate medical care and public health programs, and to identify clues about risk factors.

T

Telehealth – describes the use of advanced telecommunication technologies to exchange health information and provide health care services across distance and time.

Tool – technically-oriented materials and strategies to identify or reduce environmental risk factors for asthma; materials can be produced as web-

based educational materials; brochures and pamphlets; television, radio, or print media; checklists; or other ways of conveying information; strategies can include providing training, increasing capacity, conducting inspections, evaluating baseline or other data, enabling advocacy, seeking funding, and other interventions.

V

Voluntary Code – a guideline that an organization subscribes to, but which is not a regulatory requirement.

W

Work-aggravated asthma – occurs when asthma that was present before employment at a specific job is aggravated by exposure to an agent(s) in the workplace; recurrent asthma episodes may be triggered by exposure to cold temperatures, excessive exertion, or exposure to other agents.

Workplace – includes employers and their employees who are covered by the Indiana Occupational Safety and Health Act of 1974, Indiana Code 22-8-1.1.

Workplace asthma – includes occupational asthma and work-aggravated asthma.

Work-related hazard (for asthma) – a substance or condition in the indoor or outdoor workplace environment that is directly related to the activities of the workplace and which may cause asthma attacks or episodes; examples include diisocyanates, dyes, acrylates, pharmaceutical agents, flour and grain dust; ammonia and other irritant gases.

acronyms and abbreviations

Acronym abbreviation	Name or description of agency/organization
AAP	American Academy of Pediatrics
AAFP	American Academy of Family Practice
AHEC	[Indiana] Area Health Education Center Program
ALA	American Lung Association
ASHTO	Association of State and Territorial Health Officers
BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
CAPS	Community Action Programs
CASA-AFIX	Clinic Assessment Software Application (a tool for assessing immunization practices) – Assessment, Feedback, Incentives and eXchange (a quality improvement strategy)
CCM	Chronic Condition Management
CDC	Centers for Disease Control and Prevention
CEU	Continuing Education Unit
CHC	Community Health Center
CHIP	[Indiana] Children’s Health Insurance Program
CME	Continuing Medical Education
CPSC	Consumer Product Safety Commission
CSHP	[Indiana] Coordinated School Health Program
DHHS	[US] Department of Health and Human Services
DOE(IDOE)	[Indiana] Department of Education
EMS	Emergency Management System
EMT	Emergency Medical Technicians
EPA	Environmental Protection Agency
ETS	Environmental tobacco smoke (also known as second-hand smoke)
FSSA	[Indiana] Family and Social Services Administration
GIS	Geographic Information System
HEDIS	Health Employer Data and Information Set
HIPAA	Health Insurance Portability and Accountability Act
HPSA	Health Professions Shortage Area (federal designation)
HRSA	Health Resources and Services Administration (U.S. Dept. of Health & Human Services)
HUD	Housing and Urban Development (federal housing agency)
IAAAA	Indiana Association of Area Agencies on Aging
IAFP	Indiana Academy of Family Physicians
IAPHP	Indiana Association of Public Health Physicians
IAQ	Indoor Air Quality
ICCP	Indiana College of Clinical Pharmacists
ICDMP	Indiana Chronic Disease Management Program
ICRC	Indiana Civil Rights Commission

acronyms and abbreviations

IDEM	Indiana Department of Environmental Management
IDOC	Indiana Department of Commerce
IDOI	Indiana Department of Insurance
IDOL	Indiana Department of Labor
IEHA	Indiana Environmental Health Association
IESC	Indiana Education Service Centers
IHFA	Indiana Housing Finance Authority
IHHA	Indiana Hospital&Health Association
IHPB	Indiana Health Professions Bureau
IHSA	Indiana Head Start Association
IMHC	Indiana Minority Health Coalition
InJAC	Indiana Joint Asthma Coalition
IOM	Institute of Medicine
IPHCA	Indiana Primary Health Care Association
IPHA	Indiana Public Health Association
IRHA	Indiana Rural Health Association
ISDH	Indiana State Department of Health
ISMA	Indiana State Medical Association
ISNA	Indiana State Nurses Association
ISOBC	Indiana State Office Building Commission
ISTA	Indiana State Teachers Association
ITPC	Indiana Tobacco Prevention & Cessation Agency
IU	Indiana University
IUSM	Indiana University School of Medicine
IUSN	Indiana University School of Nursing
LHD	Local Health Department
MCHD	Marion County Health Department
MCO	Managed Care Organization
NAEPP	National Asthma Education and Prevention Program (NAEPP), sponsored by the National Heart, Lung and Blood Institute (NHLBI)
NAS	National Academy of Science
NCQA	National Committee for Quality Assurance
NHLBI	National Heart, Lung and Blood Institute
OISC	Office of Indiana State Chemist
OMPP	Office of Medicaid Policy and Planning
OSHA	[U.S.] Occupational Safety and Health Administration
Pre-K	Pre-kindergarten
PTA	Parent Teacher Association
PTO	Parent Teacher Organization
Purdue Coop	Purdue University Cooperative Extension Service

appendix

the following pages are excerpts from *Healthy People 2010*

24

Respiratory Diseases

Goal

Promote respiratory health through better prevention, detection, treatment, and education efforts.

Healthy People 2010—Summary of Objectives

Respiratory Diseases

Goal: Promote respiratory health through better prevention, detection, treatment, and education efforts.

Number	Objective Short Title
--------	-----------------------

Asthma	
---------------	--

24-1	Deaths from asthma
24-2	Hospitalizations for asthma
24-3	Hospital emergency department visits for asthma
24-4	Activity limitations
24-5	School or work days lost
24-6	Patient education
24-7	Appropriate asthma care
24-8	Surveillance systems

Healthy People 2010 Objectives

Asthma

24-1. Reduce asthma deaths.

Target and baseline:

Objective	Age Group	1998 Baseline	2010 Target
<i>Rate per Million</i>			
24-1a.	Children under age 5 years	2.1	1.0
24-1b.	Children aged 5 to 14 years	3.3	1.0
24-1c.	Adolescents and adults aged 15 to 34 years	5.0	2.0
24-1d.	Adults aged 35 to 64 years	17.8	9.0
24-1e.	Adults aged 65 years and older	86.3	60.0

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

24-2. Reduce hospitalizations for asthma.

Target and baseline:

Objective	Age Group	1998 Baseline	2010 Target
<i>Rate per 10,000</i>			
24-2a.	Children under age 5 years	45.6	25
24-2b.	Children and adults aged 5 to 64 years*	12.5	7.7
24-2c.	Adults aged 65 years and older*	17.7	11

*Age adjusted to the year 2000 standard population.

Target setting method: Better than the best.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

24-3. Reduce hospital emergency department visits for asthma.

Target and baseline:

Objective	Age Group	1995–97 Baseline	2010 Target
		<i>Rate per 10,000</i>	
24-3a.	Children under age 5 years	150.0	80
24-3b.	Children and adults aged 5 to 64 years	71.1	50
24-3c.	Adults aged 65 years and older	29.5	15

Target setting method: Better than the best.

Data source: National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

24-4. Reduce activity limitations among persons with asthma.

Target: 10 percent.

Baseline: 20 percent of persons with asthma experienced activity limitations in activity in 1994–96 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

24-5. (Developmental) Reduce the number of school or work days missed by persons with asthma due to asthma.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

24-6. Increase the proportion of persons with asthma who receive formal patient education, including information about community and self-help resources, as an essential part of the management of their condition.

Target: 30 percent.

Baseline: 8.4 percent of persons with asthma received formal patient education in 1998 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

24-7. (Developmental) Increase the proportion of persons with asthma who receive appropriate asthma care according to the NAEPP Guidelines.

24-7a. Persons with asthma who receive written asthma management plans from their health care provider.

24-7b. Persons with asthma with prescribed inhalers who receive instruction on how to use them properly.

24-7c. Persons with asthma who receive education about recognizing early signs and symptoms of asthma episodes and how to respond appropriately, including instruction on peak flow monitoring for those who use daily therapy.

24-7d. Persons with asthma who receive medication regimens that prevent the need for more than one canister of short-acting inhaled beta agonists per month for relief of symptoms.

24-7e. Persons with asthma who receive followup medical care for long-term management of asthma after any hospitalization due to asthma.

24-7f. Persons with asthma who receive assistance with assessing and reducing exposure to environmental risk factors in their home, school, and work environments.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

24-8. (Developmental) Establish in at least 25 States a surveillance system for tracking asthma death, illness, disability, impact of occupational and environmental factors on asthma, access to medical care, and asthma management.

Potential data sources: Periodic surveys, Council of State and Territorial Epidemiologists and Public Health Foundation; Association of Schools of Public Health.



Indiana State
Department of Health

www.in.gov/isdh/



Indiana Department of
Environmental Management

www.in.gov/idem/